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DARWINIANISM

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DARWINIANISM:

WORKMEN AND WORK.

98502

BY

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AUTHOR OF "AS REGARDS PROTOPLASM."

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MOTTOES.

DARWIN.

"No shadow of reason can be assigned for the belief that variations —which have been the groundwork, *through natural selection*, of the formation of the most perfectly adapted animals in the world, were intentionally and specially guided" (*Var. Ans. and Pts.*, 1st ed. vol. ii. 431).

"The old argument from design in Nature fails, *now that the law of natural selection has been discovered.* There seems to be no more design in the variability of organic beings, than in the course which the wind blows" (*Life and Letters*, i. 309).

ARISTOTLE.

Nature makes all things for some end, ἡ φύσις ἕνεκά του ποιεῖ πάντα (*De partibus*, i. 1, 6).

Since we see several causes existent in nature, as the final cause on the one hand, and the efficient cause on the other, it is for us to determine in their regard, which is by nature the first, and which the second. But that is seen to be first which we call the final cause, design. For this is reason, but reason is the principle alike in the things of art and in the things of nature. In these latter, however—in the works of nature, the final cause and the good is more plainly manifest than in the works of art, for necessity does not similarly obtain in them (*De partibus*, i. 1, 2).

ARISTOTLE (*continued*).

We must not allow ourselves to be childishly disgusted with the observation of the less attractive organisms, for in all the things of nature there is something that is admirable. Just as Heraclitus, according to the story, exclaimed to the visitors who surprised him in the kitchen by the fire, "Come in, for here, too, are the gods;" so we, too, must approach to the inspection of every animal with never a wry face, since there is what is natural and beautiful in all things. For in all the works of nature there is not chance but design, and that, too, in the highest (*De partibus*, i. 1, 5).

PHILO.

Οὐδὲν τῶν τεχνικῶν ἔργων ἀπαντομματίζεται.

HEGEL.

The Principle of Design, consciously signalised by Socrates, was developed and completed into full recognition by Plato, and especially Aristotle.

Aristotle declared the main quest, or the most essential knowledge (ἐπιστήμη ἀρχικωτάτη), to be the recognition of the *end* (τέλος—*Zweck*): but that is the good of everything, or just generally the best in all nature.

PREFACE.

PERHAPS it may be thought that, on the whole, I might very well have spared myself this small venture; but the truth is that, days, weeks, months, years, I have remained so assiduously by these matters, that I cannot but seem to myself to be still burthened with a certain responsibility in their regard.

Mr. Darwin (*Life and Letters*, ii. 222) tells W. B. Carpenter: "I have found the most extraordinary difficulty in making even able men understand at what I was driving." Nor can he always withhold similar expressions of inquietude from others of his correspondents. "This review and Harvey's letter have convinced me that I must be a very bad explainer; neither really understand what I mean by natural selection; I am inclined to give up the attempt as hopeless: those who do not understand, it seems, cannot be made to understand." So he complains (p. 316) to Sir Joseph Hooker; while to Sir Charles Lyell (p. 317) he writes thus: "I am beginning to despair of ever making the majority understand my notions; several reviews and several letters have shown me too clearly how little I am

understood." These very experts themselves (Hooker and Lyell), he confesses to Gray, "sometimes use expressions to which I demur."

With such facts in front of us—though I fear it can only be regarded as impertinence to say so—it is just possible that what *exact point* is concerned in the *Origin of Species*, is not fairly understood even yet. I am not sure, in fact, that any one ever thinks that there is at all any *exact point* concerned. *Evolution*, taken quite generally, rather perhaps quite vaguely, is conceived to be enough; and it never enters one's head that there is any the least need to go deeper. But theories of evolution are by no means one only—there are several of them; and if they are all right in that they hold of evolution, they are not all therefore necessarily right in that they are theories.

I have not the slightest doubt myself that there is a true theory of evolution, but—

In view, then, of the difficulty—say of statement—which we see deplored by Mr. Darwin himself, perhaps it may be allowable for another, without undue conceit, to attempt to make all Mr. Darwin's proceedings plain—fairly, faithfully, and fully plain—even as he meant them.

Now, the single Darwinian proposition may be expressed thus:—

Species are *naturally* modified into species, by *natural* variation, *naturally* realised into a new *natural* relation, through *natural* divergence (selection); and *naturally* in the struggle for existence.

And it is this sentence which it is my endeavour in

all honour to make plain, as it is the theory involved which it is also my endeavour, with all honour, to refute.

I shall hope for some small credit in the success of that, even if I fail in this.

My authorities, whether as regards Workmen or Work, will all be found named. To Mr. Francis Darwin's three volumes of the *Life and Letters*, I have very special obligations, as will readily appear: if for one's psychology of grandfather and father one had respectively Miss Seward and Miss Meteyard, one had for Charles Darwin —with himself—only Mr. Francis.

I may remind here also how I explain in my *Gifford Lectures*, pp. 326, 375, and 376, that I had to forego a first intention psychologically to inquire, "not only into the life and character of Mr. Darwin himself, but into those of his father, and specially of his grandfather;" as well as that I had found it impossible there and then to do that justice properly to the theme of the *Work* "for which I had prepared myself."

It may sometimes prevent a confusion of names if the reader start with knowing that Charles Darwin's grandfather, the Dr. Erasmus Darwin of *Zoonomia* and the *Botanic Garden*, had two sons. These were called, the one Erasmus, and the other Dr. Robert Waring. This Erasmus had an untimely death. Dr. R. W. was the father of our hero, Charles. Charles had for brother a third Erasmus; and he had also for son Mr. Francis Darwin; whose grandfather, consequently, was Dr. R. W. Darwin.

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DARWINIANISM.

PART I.

THE WORKMEN.

CHAPTER I.

INTRODUCTORY.

"RUDGE immortalised the name of Darwin through introduction to the *Flora* of the genus *Darwinia*."

To read, in the *Conversations-Lexicon*, date, 1844, article, "Darwin (Erasmus)," these words nowadays, is to be surprised by a variety of reflections—by this reflection among others, that it would be the enthusiastic Rudge himself who, were he in case to read, would probably be the most surprised—surprised to find that, as facts are, it is *Rudge* (himself), not *Darwin*, he has—well, "immortalised!" Of course, in 1893, it is Charles, not Erasmus, we think of as having immortalised the name Darwin; but, to speak extravagantly, had there been no Charles, would not the ascription to Rudge of immortalising the name through a new genus in the *Flora*—would not this ascription to Rudge have still been relevant down, on the whole, to 1879? It was in

that year, namely, that there appeared in England that translation of Dr. Ernst Krause's *Essay on the Scientific Works of Erasmus Darwin*, which, according to the declaration of Mr. Francis Darwin, is a "glorifying of the older Evolutionist." Now, was it not for the first time then, after many years, that that glorifying took place, and till it took place, must it not be acknowledged that, as has been said, Charles apart, the allegation of the German *Conversations-Lexicon* remained true for Rudge? Without Charles, to Rudge alone would have remained the credit of having immortalised the name Darwin. And this solely by introduction into the *Flora* of the new genus *Darwinia!* No doubt, it is quite certain that, in his own day, Dr. Erasmus Darwin acquired a widespread and enormous reputation; but it is equally certain that that reputation collapsed and vanished almost as suddenly as it rose. Of his various works, edition had followed edition, not only in England, but even in America; while on the Continent, in France, Germany, Italy, translations had appeared. He preceded Scott, Byron, Moore as a poet of a thousand guineas the canto. Miss Seward, in her Life of him, published in 1804, talking the language of the time, speaks of the *Botanic Garden* as "a magnificent poem," and of its author as on a level with "Pope, and Swift, and Gray, and Johnson." In fact, she says, "neither Pope nor Gray could have executed the poem so well;" Dr. Darwin is "not inferior to Ovid," and "the *Botanic Garden* will live as long as the *Metamorphoses*." "Its successive pictures alternately possess the sublimity of Michael Angelo, the correctness and the elegance of Raphael, with the glow of Titian, at times the strength of Salvator Rosa, and at others the softness of Claude!" (What a fine familiarity is this with names — a familiarity quite uncommon!) Dr. Samuel Johnson honoured Erasmus with his hatred, and

Coleridge coined for him the verb to "Darwinise." He drew refutations from a Dugald Stewart and an Archdeacon Paley; and Dr. Thomas Brown laid the ground for his own reputation in a volume to disprove him. Thomas Campbell published his *Pleasures of Hope* in 1799: they ran through four editions in a twelvemonth; but there can be little doubt that the resounding roll—"Oh, bloodiest picture in the book of time!"—of those marvellous Sarmatian numbers is scarcely more than a well-caught reverberation from the laborious succussions of Dr. Darwin's theatrical sheet tin. John Dennis complained that the rascals had stolen his thunder; and no less a larceny of his tin (din) Erasmus might have brought home to Thomas!

So far, we have the tide at the flood; but it was already at ebb as early as 1809, when Lord Byron appeared with his *English Bards and Scotch Reviewers*. In that poem Darwin is regarded as but little better than another Cottle or another Stott;[1] a note in it exclaims that "the neglect of the *Botanic Garden* is some proof of returning taste," while in the text, "false glare," "gilded cymbals," "native brass," "pompous chime," "tinsel," are alone declared to constitute the contents of it, and he, its author, is but "flimsy Darwin," a "mighty master of unmeaning rhyme." By and by, Professor Craik names his verses a sort of "pin-making;" while Mr. Lewes, later, characterises his "tawdry reputation," in its "tawdry splendour," as "equally noisy and fleeting." In short, judge after judge appears vieing with each other in reprobation and contempt, till, on the part of

[1] "Bœotian Cottle—
Oh, Amos Cottle!—Phœbus! what a name,
To fill the speaking trump of future fame!"—
"Some leaden calf—but whom it matters not,
From soaring Southey down to grovelling Stott."

the public, conclusion there could be none but that Dr. Erasmus Darwin, convicted in his verse of the confused images and vacant resonance of mere repercussion and rebound, as previously, in his prose, only of "the crude and visionary metaphysics of the half-informed multitude who"—it is Dugald Stewart speaks—"follow the medical trade," had, after having excited "a degree of interest in the literary world, wholly disproportionate to his merits" (Dr. Welsh in Memoir of Brown), been definitively remitted and consigned to his primitive obscurity and prescriptive oblivion.

In the later Darwinian literature it is not difficult to detect tokens of a hurt sense of this on the part of the family. It is not to be supposed, indeed, that any right-feeling scions of the stem could have remained in equanimity under the idea that he, who had been their envied honour as a gem, should be the source of but half a smile for the future as no more than proved and convicted paste. Charles, for his part, even in the midst of his own great reputation, cannot but think again and again of his grandfather, in regard to whom he says once: "Throughout his letters I have been struck with his indifference to fame and the complete absence of all signs of any over-estimation of his own abilities, or of the success of his works." When we think, however, of the rough sufficiency and rude imperiousness of the man, of which his coarse reception of Dr. Thomas Brown may furnish some proof, one feels more disposed to respect in Mr. Darwin his family piety than his knowledge of character. His own son (Charles's), indeed, would seem to have experienced the same suggestion here, for his comment—the comment of Mr. Francis Darwin appended to the above words, is, "Yet we get no evidence in Erasmus of the intense modesty and simplicity that marked Charles Darwin's whole nature."

No: Charles Darwin was relatively perfect; but it was not for either modesty or simplicity that we can commend Erasmus. Miss Seward and Mrs. Schimmelpenninck, in their respective characterisations, may possibly, in some degree, have erred both; but "it is extremely probable," candidly admits Mr. Francis Darwin here, "that the faults which they exaggerate were to some extent characteristic of the man, and this leads me to think that Erasmus had a certain acerbity or severity of temper which did not exist in his grandson—the two men were of a different type." Mr. Francis Darwin is evidently an expert in character; but one almost inclines to the idea that it was Charles's own innocency of nature which neutralised or arrested any such force in him. It is not exactly knowledge of character one sees in Mr. Darwin when he comes to give us his views—say of such men as Carlyle and Buckle. He hits the mark, however, when he speaks of his grandfather's "overpowering tendency to theorise and generalise." But, again, considering, on the part of both Charles and his brother Erasmus, their eager welcome of Dr. Ernst Krause in his rehabilitation of Dr. Darwin, and their own necessary endorsement of the decision of Dr. Krause that the work of the grandfather is, point by point, only continued in the grandson, one is apt to speculate when Charles avows that, "on reading the *Zoonomia* a second time, after an interval of ten or fifteen years, he was disappointed, the proportion of speculation being so large to the facts given"—when Charles avows this, I say, one is apt, with the whole context before one, to speculate on amiableness and innocency even under a look of proper pride. Nay, is it not the same half pride and whole innocency we see when, in his *Life of Erasmus*, he tells us with a smile that Byron called his grandfather "a mighty master of

unmeaning rhyme"? A *mighty master!* And that it was Byron said so!

But assuming now, then, the course of Dr. Erasmus's fortunes as a writer before the public to have been, so far, sufficiently suggested, we come to what we have here specially in mind, that last act in their regard which has been already mentioned — that operation, namely, on the part of Dr. Krause which was radically to change what had been the fixed opinion of most people till far on in the century.

In the autobiography of Mr. Darwin communicated by his son, we have (*Life and Letters*, vol. i. p. 97) this: "In 1879 I had a translation of Dr. Ernst Krause's *Life of Erasmus Darwin* published, and I added a sketch of his character and habits from material in my possession. Many persons have been much interested by this little Life, and I am surprised that only 800 or 900 copies were sold." At p. 218, again, of the third volume of the same work we have the following on the part of Mr. Francis:—

"In February 1879 an essay by Dr. Ernst Krause on the scientific work of Erasmus Darwin appeared in the evolutionary journal, *Kosmos*. The number of *Kosmos* in question was a *Gratulationsheft*, or special congratulatory issue in honour of my father's birthday, so that Dr. Krause's essay, glorifying the older evolutionist, was quite in its place. He wrote to Dr. Krause, thanking him cordially for the honour paid to Erasmus, and asking his permission to publish an English translation of the essay.—The wish to do so was shared by his brother, Erasmus Darwin the younger, who continued to be associated with the project.—His chief reason for writing a notice of his grandfather's life was 'to contradict flatly some calumnies by Miss Seward.'—Dr. Krause's contribution formed the second part of the *Life of Erasmus Darwin*, my father supplying a preliminary notice. This expression on the title-page is somewhat misleading; my father's contribution is more than half the book.—Work of this kind was new to him, and, as he said himself, quite beyond his tether."

As we see, Dr. Krause's work is a "glorifying" of Erasmus Darwin into, as has been already said, the

suggestive predecessor in every respect of his more illustrious grandson. That, too, as we have seen, or as has been said, is no drawback to the satisfaction of both the younger Darwins (Charles and his brother) in a rehabilitation at length of the grandfather in whom, for the family and themselves, they entertained so great but troubled an interest. However much he might be shown to have anticipated Charles, Charles in the end could not be supposed likely to suffer; and meanwhile the grandfather would be restored to his proper place in the republic of letters, the rather now, too, that the reflection from Charles would, presumably, only co-operate in the result. As is said also, a certain confutation of Miss Seward is, in the desired restoration and rehabilitation, another, further, and most important element. That word "calumnies" is a strong word, and if Miss Seward has really been guilty of such enormities, it would be well if, in the interest of the family, she were once for all exposed. Mr. Francis Darwin, in whom as a judge of character and as an honourable English gentleman we may put implicit confidence, has been already quoted in regard to an "exaggeration" on the part of Miss Seward of "faults" really "to some extent characteristic of the man." Probably it is only to some such extent that he conceives the lady to have "misrepresented Erasmus Darwin's character." At all events, it seems not impossible that a reader nowadays of both books, Miss Seward's and Mr. Darwin's (Dr. Krause's), may find it not quite easy, on the surface, to believe the lady to have sinned further, in great part perhaps, than in the frailties that may beset any mere human being who undertakes to write the life of another with whom he has been intimate. Even for Charles it is scarcely natural to suppose a burden graver than this to underlie his warning that "everything which Miss Seward says must

be received with caution;" and as for the insinuation that Miss Seward wanted to have married the doctor herself,—that surely is too small a gossip for our revered naturalist, even at second hand! What seems brought forward really as the "calumny" on Miss Seward's part is her statement that Dr. Erasmus Darwin, when he heard of the suicide of his second son (also an Erasmus), shall have exclaimed, "Poor insane coward!" Hereupon *legally* summoned (always a very terrible trial to any outsider, let him or her be guilty, or let him or her be innocent), *legally* summoned, Miss Seward did retract this exclamation! She repeats, however, that whatever regard and sensibility in his son's reference Dr. Erasmus may have shown in his family, "he seemed to have a pride in concealing (it) from the world." "In justice to his memory, she is desirous to correct the misinformation she has received." All the circumstances of the affair are fully narrated in this way by Charles Darwin himself in the Life of the grandfather; and I know not that we nowadays would make so much of the exclamation in question, even if true.

"Dr. Erasmus Darwin had an overpowering tendency," writes Charles Darwin, "to theorise and generalise;" and this is almost the theme, we may say, that Dr. Krause sets himself to expound and expand.

CHAPTER II.

OF CONTEMPORARY PHILOSOPHY IN THE TIME OF DR. DARWIN, AND, SPECIALLY, OF HIS CRITIC, DR. THOMAS BROWN.

As bearing on the personal character of Dr. Erasmus Darwin, his reception of Dr. Thomas Brown has been, so far, just named. It may, in the circumstances, be well, however, to see what is concerned here a little more in detail. It is matter of tolerably common knowledge, doubtless, that the very first work of the Edinburgh professor and distinguished philosopher in reference, was *Observations on Dr. Darwin's Zoonomia.* I have elsewhere spoken of Dr. Brown as "a man who is not only built into our admiration by his rare subtlety, but endeared to our very affections by his sweet candour;" and, no doubt, in Dr. Brown's own works, and in his Life by Dr. Welsh, there occurs ample testimony to no less a praise. But Dr. Welsh would wish for his master and friend a great deal more to be said. Even as a poet Dr. Brown is to him one of the greatest of men. Dr. Brown's descriptions in that character, he says, "may in many cases, for simplicity, fulness, and fidelity, be compared with any in the English language." "It would be difficult to point out an equal number of lines in any other author combining so many excellences;" and he has "passages of exquisite pathos"—passages, indeed, "the most pathetic to be found in poetry."

Dr. Brown had a marvellous power of memory, and he was, almost from childhood upwards, a voracious reader of the most indiscriminate material. So much so, that he ran risk at times of his omniscience in so many and widely different subjects being regarded "as bordering on pedantry, and the interest he seemed to take in them as affected." It was poetry, however, that had certainly the greatest attraction for him; his Lectures even blossom and bloom with quotations from the whole circle of verse, both classical and modern; "and his common-place books are filled with copious extracts from French, Italian, German, Spanish poetry." To keep him at rest "during a very dangerous illness before he was five, an immense volume of old ballads was procured for him, and he continued quietly in bed till he had got the greater part of them by heart." Spending his holidays at the house of his uncle when a schoolboy, "he regularly read through a copy of Shakespeare in it." Despite of both ballads and Shakespeare, however,—despite, too, of living during the very fervour of the second great outburst of inspired poetry in England,—that, namely, on the part of the Wordsworths, Scotts, Coleridges, Campbells, Moores, Byrons,—it was Pope that was for Brown (as for Byron indeed), *par excellence*, still *the* poet! While in his Lectures he has only two quotations from Shakespeare, he has no less than thirty-eight from Pope. "Pope was the model whom Dr. Brown," says his biographer, "had most frequently before his eye; he often said that every poet ought continually to read him." The "Imitations of Horace," doubtless, are still to be enthusiastically named excellent; but I fancy most tastes, be the reason where it may, are too dull nowadays to be kindled to more than faint praise (still very sincere, nevertheless) for *Essays on Criticism*, or *Essays on Man*, for *Eloisas to Abelards*, or even *Rapes of the Lock*. His *Homer* keeps

its place; but the reason lies fully in Homer, and very uncertainly in Pope. Brown evidently was of another way of thinking; and even for his biographer we may say no less. His *Paradise of Coquettes*, says the latter, has "placed the name of Brown in the playful species of epic next to that of Pope." "It is worthy of remark," he adds elsewhere, "that Pope, whom Brown as a poet most resembles, was distinguished by his filial virtues." Brown, besides his *Paradise of Coquettes*, has any number of poems—*Wanderers in Norway*, *Bowers of Spring*, *Agnes*, *War Fiends*, and what not; but despite quantity and even quality (for with "correctness and elegance" there are "occasional fine thoughts"), "the poetry of Dr. Brown," say the critics of the day, "is now utterly forgotten." If this then be so, we are apt rather to admire all these Popian references on the part of Dr. Welsh. The contemporary halo (such halo as hovers before Hume) may have long faded from most of the works of Pope; but Pope is still Pope—at the very head, namely, of our poets of the second rank; and one cannot but feel a certain sense of discrepancy when even such a name as Brown is placed side by side with such another as Pope. So it is we smile when we read in Welsh, "In delicacy of perception, in correctness, in wit, in melody, he (Brown) was at least equal to that great genius (Pope); in refinement and temper far superior; in condensation and practical wisdom, the palm"—magnanimously!—the "palm!" —"must unquestionably be given to Pope!"

But Dr. Brown, if a great poet to Dr. Welsh, is still to him an even greater philosopher. Dr. Brown, he decides, "may be pronounced at least equal, and in subtlety of intellect and powers of analysis as superior, to any metaphysician that ever existed." This, indeed, that he was "the first of modern metaphysicians, has been confirmed by public opinion." "The discovery of

those principles by which his writings are distinguished from those of preceding philosophers will constitute an era in the history of metaphysical science." As Dr. Welsh, with the "palm" in his hand, was troubled whether he should give it to Pope or to Brown, so, even when expressing his amazement at "the marvellous display of profound and original thought," "classical finish," "matchless ingenuity," "eloquence," etc. etc., on the part of this "the subtlest metaphysician of the age," he seems obliged to admit, "Hume was nearly as acute!" but then, as he triumphantly remembers, "with all his ingenuity, he (Hume) could not rear a consistent system!" These two names, Pope and Hume, are even *categories*, two remarkable leading categories, during the second advent of poetry and romance in England: both lay at the indignant heart of the murmurers and malcontents of the sort of small *Fronde* then! But to Dr. Welsh, while his Lectures, "for metaphysical acuteness, profound and liberal views, refined taste, varied learning, and philosophical eloquence, may challenge comparison with any work that was ever published," it is still "An Inquiry into the Relation of Cause and Effect" that constitutes for Brown his capital achievement. Even "some of the notes there settle, in the most masterly way, questions that for ages had been a subject of contention among philosophers;" while, as for the Inquiry itself, it has been "matured and perfected into one of the most elegant and profound works on the philosophy of mind that has appeared in modern times," —nay, it must be regarded "as the first perfect work on a metaphysical subject, and as fixing an era in the science to which it belongs, as much as was done by the *Principia!*"

Well, that at all events is certain, that in the whole history of philosophy there is, probably, not one single

circumstance more astonishing than the belief in regard to causality that seems, in a few years after the death of Hume, to have obtained in Scotland in consequence of that philosopher's peculiar findings in his discussion of the problem. Brown it was who formulated this belief, and to the following effect:—Causation means no more than "invariableness of antecedence." Power is "only another word for expressing abstractly and briefly the antecedence itself and the invariableness of the relation." Power, that is, so far as it shall be held to be synonymous with "efficiency," is altogether denied. There is "invariableness," and that is the "efficiency:" if more or other efficiency is wanted than invariableness, then efficiency there is none. "The feeling that one object will never appear without being followed by another—that is "the essence of our idea of efficiency." It is in this reference that, as I remark elsewhere, Burton has, in his Life of Hume, these astounding words: "This refers to the notion, which now may be termed obsolete, at least in philosophy, of an inherent power in the cause to produce the effect!" These words were printed in 1846! We may say, then, that the belief in question has had, to use the dialect, its "*votaries*" in Scotland, actually, for the best part of a century! It is Hume that is credited with the proposition; and there is no such proposition in Hume. Hume knows, and never denies, that a cause has efficacy, efficiency, power to produce its effect; he knows, and never denies, that there is a reason for the necessity between them: he only asks, Can you, *philosophically*, point it out? No doubt, his conclusion is, that *it*—the reason—can *not* be pointed out; but then, that is all: he asks for no more. Give him that, and he confidently marches up with it to the very entrenchments of "*superstition;*" but he is perfectly aware all the time that a cause *has* efficacy to produce

its effect. The cause is the cause, the effect is the effect; the effect is not the cause, and the cause is not the effect. The cause is A; but the effect is B. And A is not B. What binds B to A—why does B always follow A? We do not see what "*binds:*" "we only find," says Hume, "that the one does actually, in fact, follow the other. The impulse of one billiard ball is attended with motion in the second. This is the whole that appears." No doubt, as I say, Hume, *for his own purpose*, took full advantage of the dilemma. And it was very absurd that Reid, Oswald, and Beattie kept asseverating that there *was* a connection, that there *was* a necessity. Hume never disputed that; he only asked for the reason: and not one of them ever attempted to produce it. Of course, Hume's illustration is very unfortunate for himself; for the reason of the connection, the reason of the necessity was very apparent as regards the billiard balls. The problem did not lie either in the ball A or in the ball B; but it did lie in the single thing, the motion between them. Perhaps Hume did not think of that; but he did think, as "*instinct*," he confessed, taught him, that there was a "*natural*" necessity, that is, a natural *reason* in the whole business. And I do think he would have been astonished that Stewart, Brown, and the rest made as though they took him at more than his word, and that there was no power, efficacy, efficiency—nothing but *invariableness*—in the relation of causality as such. Nay, I do believe he would even have been astonished at Reid in thinking himself obliged to admit that his (Hume's) reasonings applied to "inanimate," but not to "intelligent causes." Hume, I doubt not, knew perfectly well that in inanimate causes there were no exceptions. A man chooses for his purposes an agent, an agent that is adapted to them, a knife to cut his meat, a hammer to drive his nail, a

button to fasten his coat, a garter to keep his stocking up. Indeed, this is the case everywhere. My hand compressing a full sponge carries the constitutive particles of the latter nearer each other, and the mobile water is forced to quit. Surely the force here is a very sensible power. But the case is not different when a pricked bladder collapsing drives the air out by the force of its elasticity. That latter force, though inanimate, is quite as the former; and the two are perfectly susceptible of the most accurate, proportionate admeasurement. Certainly the hand is not the sponge, and the bladder is not the air: each is itself, and very different from the other. Nevertheless, in regard to the action which has taken place *between* them, *it* is a concrete, and holds of both. Brown would have us ignore all *between*. He would have us see an abstract or independent individual A put down, and just on the instant, for no known reason, an abstract or independent individual B start up! Such relation really seems so on the part of a struck key and a heard note on the piano. The key is A, the note is B; and they seem abstractly beside each other. But, in point of fact, even they are not the abstract side by side, invariably so found, which Brown would have us hold to be the sole state of the case in the cause and in the effect. Open your piano, and you will see the concrete mechanism between—the copula, the medium, of the struck and vibrating wire. The ultimate specific copula between the air-wave and the sound in the ear—medium between matter and mind—we do not know; but we do know that there are steps to it. What are all these ossicula, and cochleæ, and scalæ, etc. ?—What but machinery adapted for the purpose? Put the end of a stick in the fire, and it is burned black. The stick simply *becomes* black; *it* feels no power that makes it black. The state of the

case would, in all essentials, remain pretty well the same, were there substituted for the stick the finger of a corpse. Were there substituted, however, a living finger, the force, the power of the fire would be felt; for in that case there are nerves. A piece of white wood blackens under the clear drop that shall be one of vitriol. The wood is blackened under the drop for the same reason that the stick was blackened in the fire. In either case the withdrawal of the water (call it simply HO) left (C) the carbon in sight—black. The wood no more *felt* the power of the acid than the stick *felt* the power of the fire; but a living finger would be in case to *feel* both. In all cases of causality, there is the mediation of a *tertium quid:* there is the process, action, motion of a middle term between the extremes. And it is not by any means an objection in place to say this middle term is not always known. A great many middle terms are hidden from the savage; but for us, members of civilisation, science is only there to teach us middle terms. In fact, just in a general regard, and every way, civilisation is nothing but—knowledge of middle terms. Were the extremes in causality only, as Brown would have them, strictly *collateral*, nakedly *collateral*, an abstract AB (but invariable), then science there would have been none, civilisation there would have been none. Humanity itself is simply—necessity of rationale: *it is alone the middle term that is the entire secret of the universe.*

Reid, too, was on the whole unhappy in seeing *power*, that is, middle terms, only in the case of animate causation; for, at least so far as most people are concerned, it is precisely in animate causation that, not unfrequently, a middle term seems the want—seems singly that which is unable to be found. "How it is that anything so remarkable as a state of consciousness comes about

as the result of irritating nervous tissue, is just as unaccountable as the appearance of the Djin when Aladdin rubbed his lamp in the story." This is what Mr. Huxley says; so that he for one, at all events, finds himself at a loss for a middle term when the physical and the metaphysical meet. Whatever be the structure of the ear, it is, in ultimate instance, still a vibration on the physical side that suddenly starts up a sound on the metaphysical side. And in that situation, and as so described, we may best understand what Brown's decision comes to—the decision of simple invariableness. What is meant by an abstract A B is perfectly visible there. Vibration is the A, and sound is the B. The *vibration* is abstract, isolated, on its side; and the *sound* is abstract, isolated, on the other side. The relation itself is abstract. The terms of it, the sides of it, only touch: there is no concrete connection between them. Nor is the case easier, or in any way different, where any other meeting place of physiology on the one hand, and psychology on the other, are concerned. Alum and astringency for taste, a rose-leaf and fragrance for smell, wool and warmth for touch: there, too, in each case we have only abstract sides; the middle term that is concretely to bridge them, we cannot see in any one of them. With sight the difficulty is only greater, and perhaps only all the more that on the one side, the physical one, the intermediation of middle terms is so abundant and curious. To obtain that image on the retina the contrivances are as nice as numerous, as minute as vast; but the image physiological and the image psychological differ still by the whole diameter of being. Image and image are but an abstract A B. So it will always be when internality and externality are brought into relation. There, too, there is a direct side by side where the line between has neither breadth nor

thickness. Nevertheless that dimensionless line is but an immeasurable gulf. And in this we may seem to have raised up an insuperable barrier to our own selves. We say between the extremes of cause and effect, there is always a middle term of embrace; yet here, where psychology and physiology, inner and outer, are concerned, we seem to say, in exact contradiction of our own selves, that middle term there is none. And we admit that the state of the case must not only seem, but actually be so—*unless we can find the one ultimate middle term that explains all, and is the single principle of the universe!* But that is an interest for a special elsewhere. We can say now this, however, that no scalpel to ear or eye or brain will do more than simply complicate the physical side: it will never reach the bridge—it will only lengthen the way to it.

All that we wish now is that it should be seen what Brown's invariableness amounts to. It is no solution of the problem: it is, in fact and in truth, the very crux of the problem itself. Why is there the invariableness—say of nerve (lamp) here, and of consciousness (Djin) there? The invariableness it is that is the special difficulty. How do you account for it? What is your explanation of it? Were we to deal with you in your own way, indeed, we should ask, How do you even know the invariableness? You can, and you do, only refer this invariableness to experience; but no experience is exhaustive—no mere experience is adequate to *a must.* Make experiences as numerous as you may, they are still but experiences—facts found simply as facts, not combinations reasoned into necessities of insight. The separate facts that *have been,* if they are no more than *facts,* bring with them no certainty that they *will be.* Even an always in the past, if no more than such *always,* is no guarantee for an always in the future. That stands to reason; and

it stands equally to reason, that a thousand respective *measurements* will never counterpoise or equate the single geometrical *proof* (say, *e.g.*, of Euclid, I. 32, or I. 47).

So, just in every way, Brown's invariableness in explanation of causality is a proposition untenable, is a proposition crude. The darkness of an eclipse, or the lifting up in the balance of the pound weight by the two pound weight, are not matters of mere invariableness, but of insight as well. These glasses are the cause of the clearness of that print; but the glass is not just abstract on the one side, and the clearness equally abstract on the other. Even a savage would give a bewitched inside of power to the glass, which a Newton would convert into a transparent concrete of reason—with no barrier but what, as said, is apparent, always at last between psychology and physiology, physics and metaphysics, matter and mind.

It is not so certain, however, that such explanations of concretes by abstractions, as that, in the case of Brown, of causality by invariableness, may not have bad results elsewhere. Political Economy, for example, is a science absolutely true in its great generalisations. But these generalisations are not true if only left abstract. They must, on the contrary, be seen into and understood. Abstractions must be deepened and vitalised into concretions. Demand and supply, for instance, will never come together, if they are separated by customs and prohibitions, and ships of war in support. Supply, when it is a human being that sees a profit to itself in Demand, will always incline to realise that profit—unless precluded and prevented. So it will cultivate the very worst lands in existence, provided only that they will yield a profit; and that is but a part of the fact that the law of rent is no abstraction, but a fact—a concrete natural fact. Good lands, and well-placed lands, *must* yield more than

inferior lands or lands less advantageously placed; and that being so, no power in the universe can prevent human cupidity offering rent—*for the advantage*, so long as there is the advantage.[1]

But false abstractions are not limited to political economy. It is to such influences that we have such modern views as that there may be more dimensions than three dimensions, that there is no such thing as substance, for it can only be known by qualities, and no such thing as freewill, for it can only be known by motives. This, too,—that it is only one's individual motives that are to be respected!—that that is liberty!

Dr. Brown, nevertheless, after all that may be said, was decidedly a metaphysician of merit; a man born for the trade, and who made the most of it in the material which he knew of—which perhaps alone he *could* know of. His paper on Kant in the first volume of the *Edinburgh Review* is delightfully illustrative here. The writing in it is eminently excellent, and the tone all through is perfectly measured, courteous, liberal, and fair. Brown tells at once that he knows nothing of Kant in original documents: what he has to do is simply to review the French work on Kant of Charles Villers. Kant's views, as they in this way appear at third hand for the first time in English, have certainly a very extraordinary look; and one finds it only natural in the kindly courteous reviewer, who knows that philosophy is simply what comes within hail of John Locke and David Hume, to regard these strange flittings which he can alone see in what Villers describes to him, as the usual merely well-meaning but wholly inapplicable fabrics of an individual German inner consciousness — monsters, artefacts, reels in bottles, for a well-polished Humian smile!

[1] The whole of Political Economy pretty well sums itself in the single category—the single question—What will pay?

Brown closes the trinity of the Scotch philosophers; and he is, on the whole, no unequal third. From first to last in Reid, in Stewart, in Brown, it is simply an Inquiry into the Mind that is alone before us. Reid, by the establishment of constants, would like to put to flight all these plaguy fluents of Hume; and Stewart, who is rather fascinated by these same fluents, but who must still as a professor's son and a professor himself rank on the received side—Stewart would review these constants, re-marshal them, re-dress them—re-dress them, and that, too, in the very finest of possible British uniforms; while, finally, for his part, Brown would fain, in view of his own originality and worth, throw all into new and admirably simpler groupings. Each of the three has his own merit. Reid, as first, would seem naturally to deserve most acknowledgment. He is an excellent professor. His pupils must be allowed, on that material, to be excellently well pastured; and he himself indeed, not pretending to much, must be allowed to have realised all that he pretended to. His style, consequently, is plain; for were it more, it would be too much. But yet Reid can touch the very deepest themes, as necessary and contingent truths, time and space, etc.; at the same time that his current material is no more, as said, than the usual psychology of the "schools." Hutcheson was a far more learned man than Reid; and, leaving out of view what æsthetically is peculiar to him, his little Latin books show, probably, what constituted the consideration of most of the *Chairs* all over Europe at the time. Indeed, these little Latin books would not even yet be out of place, were they laid down as initial guide-books to philosophical courses nowadays. The elegance of their Latin is still held in admiration even by the Latin-writing philosophers of Germany itself. One sees that Hutcheson has read, among others, *Wolfius*. With

all before us that is suggested by what we find in Hutcheson, then, I know not that so very much praise is due to Reid even for his initial collection. The extemporaneousness, so to speak, not only of his writing in his Lectures, but even of his inventions, is, on the whole perhaps, rather against Brown; and it is Stewart who, in regard to maturity at once of reflection and work, not without equal regard also to his own, on the whole, generous nature, must be held to be the most valuable of this small and peculiar Scottish school. As Carlyle never made a greater blunder in his life than when he spoke against Keats, so Hegel never made a greater blunder in *his* life than when he said, "Of these Scots, Dugald Stewart, who still lives, seems to be the most insignificant." The relative merits of the three can be verified by the easiest of comparisons at any moment; for it is absolutely the same material, and absolutely in all respects the same that is anywhere discussed by either of them. There is *Conception*, for example; Reid writes relatively, and Stewart writes relatively, and Brown writes relatively: place the three chapters together, and just see which is best. Of course Hamilton was even virulent in all denial of Brown; but Hamilton need not impose on us. Hamilton makes, and even academically verified, an enormous parade of erudition—in regard to Commentators! and how small is the vocabulary of such and how easy it is to read it, each of us can make good for himself, if he will only turn up, in Homer say, the commentating *Hypotheses* at the beginning of each book! Perhaps, indeed, it was impossible for such a petulant, negative, nagging nature as Hamilton's ever to be profound. His inquiry into Qualities is about the best thing in him that has the look of an inquiry, and even *it* must by his impatience be marred. Observe, too, how he takes himself together

for the final settlement of all that concerns *Association.* "When not otherwise stated in the notes, the text of Bekker is that from which the translation will be made," he says; but, "besides this admirable recension, with the variations of six MSS., I shall compare," he magnanimously intimates, the "*Camotio Aldine, Erasmian, Morellian, Simonian, Sylburgian, Casaubonian, Pacian,* and *Duvallian* editions; but above all, the quotations in *Themistius,* and the ῥήσεις in *Michael Ephesius.*" "Of *versions,* some of which have the authority of MSS.," he continues, "I have those of *Leonicus, Scheglkius, Vatablus, Perionius, Labittus, Simonius, Crippa,* and the *anonymous* version extant in the Venice editions of the combined works of Aristotle and Averroes. That of *Alcyonius,*" he admits with noble self-denial, "I have not seen"—but—"*Taylor's* English translation is mere rubbish." So far of Versions and Text; but, oh! now of commentators! "Of *commentators* on the *De Memoria* I have the following:—The Greek paraphrase of *Themistius* which dates from the fourth century.—The only edition is that of Aldus in 1534.—The Greek commentary of *Michael Ephesius,* in points of difficulty seldom more than a transcript of *Themistius,* is of a comparatively recent, but uncertain, date. If Allatius (*De Psellis,* § 32) be right in his plausible conjecture, and the Scholiast and the ex-Emperor Michael Ducas, who died Archbishop of Ephesus, be the same, it will not ascend higher than the latter part of the eleventh century. Of this, also, there is only one edition—the Aldine of 1527.—I am well acquainted with the scholastic commentaries of *Averroes* († 1206), *Albertus Magnus* († 1280), and *Aquinas* († 1274). Subsequent to the revival of letters, I have the expositions of—*Faber Stapulensis,* 1500,—*Leonicus,* 1520,—*Javellus,* 1540,—*Scheglkius,* 1546,—*Labittus* (in MS.), 1553,—*Gesner, c.* 1560, but only printed 1586,—*Simonius,* 1566,

—*Crippa*, 1567,—the *Coimbra Jesuits*, 1600,—*Pacius*, 1600,—*Havenreuter*, 1600,"—but, with a sigh, he concludes, "the paraphrase of the Greek monk, *Theodorus Metochita* († 1332), has — escaped me!" Here are trucks, and tumbrels, carriage-waggons, and beasts of burden, one would say, enough, surely, even for an army of Xerxes—and what if, in the end, they only draw a pea! Manuscripts and manuscripts, editions and editions, texts, versions, commentaries—I wonder how much of no more than the one authority—and even only in his one work concerned here—Hamilton really knew! To judge of Hamilton's Greeks as one judges of Hamilton's Germans, would lead to a very sorry estimate. And yet it was perfectly well known, and bragged, and boasted of him, that he had simply smashed every German that ever breathed—Hegel, and Schelling, and Fichte, and—Kant even! What a pity it was he died before Theophrastus was shown by Waitz to be an authority for the—Quantification of the Predicate! Not that it would have pleased him to find Prantl in this reference somewhat of the opinion of Dr. Thomas Brown, who has this: "To the communication of knowledge, it is necessary that the predicate be more comprehensive than its subject!" The Quantification of the Predicate, as we see it now, with all its bugles, drums, trumpets, and whole armouries of bows and arrows — one had to wait some one thousand three hundred years, after Aristotle, for Hamilton to give us that! And yet that even Brown should have scoffed at it! Hamilton hated Brown; but he would have hated him ten times worse had he known that—which, however, as hidden in the Observations on Darwin, he, probably, did not know. It is really difficult to account for this heart's hatred of Hamilton to a man veritably so modest, amiable, and equitable as Brown was. Could Hamilton have hoped

to oust Brown from his place with, and in succession to, Stewart and Reid? With all his erudition and his miscellanea of a look here and a look there, Hamilton, on the whole, never undertook what may be allowed as a complete study of any one unless of the two, namely, Stewart and Reid. He had, too, a fearful temper at times, especially when seriously impugned, as by Hare, say; at the same time that his impugnment of others, besides Brown (Whately, Whewell), was always concentrated enough. Even to Reid he bears himself with a sort of ostentatiousness; and I know not that of contemporaries, there is any one to whom he is perfectly respectful and submissive, unless "*Mr.* Stewart." Hamilton, heart and soul, was too much ever on edge. Hence his susceptible fiery vanity, his keen impatience, his perpetual peremptoriness. Hence, also, on the supposition that the edge was *too sharp to be seen* (of consciousness), existence always for the time only on one side of it. Hamilton has left a considerable amount of writing; and if he does not add *material* to his three predecessors, he at least contributes names enow. Carlyle does not often blunder; but as certainly as he blundered about Keats, so certain is it that he blundered about Hamilton—Mill, probably, being in his eye for the moment!

But, apart from Hamilton, these three psychologists are still valuable, and *for* these three, the three philosophers that preceded *them* are, in a way, indispensable —if only as points and occasions of connection. For neither in them is there much that is substantial for philosophy. Of that, of philosophy, the substance is to be found in the Greeks and the Germans alone: aught else, in that regard, anywhere, and under any name, is but introductory. What concerns an innate element, or, again, the origin of ideas, is not much in Locke; but, like

Reid, he is *led* to say a good deal of more consequence as in regard to "instructive" as distinguished from "trifling" propositions. Berkeley says little else but that our knowledge must be *where* it is and *as* it is; that is, it must be internal and ideal only. And as for Hume, we may allow his own appraisement of himself to be still the right one: he tells Hutcheson that his (Hume's) "reasonings will be more useful by furnishing hints and exciting people's curiosity, than as containing any principles that will augment the stock of knowledge."

All that is excellently introductory, however, to Reid, and Stewart, and Brown; as these, in turn, are again excellently introductory—especially *with* the indispensable Descartes, and Spinoza, and Leibnitz—to the Greeks and the Germans.

The three psychologists, indeed, have been very specially valuable for Scotland. Not only have they constituted, *positively*, during three generations, the business of its philosophical Chairs; but they have sufficed, *negatively*, to preclude the entrance into Scottish Universities of that extraordinary material that deluges England —those abstract copy-lines, brocards, that, though words, are to have the force of things, and which we owe to certain belated, but very stiff, prim, and positive sages, all saturated with the wisdom of David Hume. These were simply stupefied with astonishment that Demand and Supply would not work when the United States *stopped* it! A John Stuart Mill is starched to a single maxim; but, says Hegel, "he who acts on a single maxim is a pedant, and just spoils all, both for himself and the others."

CHAPTER III.

DR. THOMAS BROWN AND DR. ERASMUS DARWIN.

WE have certainly, in the preceding, a long enough digression, the principal purpose of which as it arose was simply to show (with a glance at contemporary philosophy then) what sort of a man, as a philosopher, Thomas Brown was that sent its author his *Observations on Dr. Darwin's Zoonomia.* But Brown was not exactly then the great Dr. Brown whom we have just portrayed. No; Brown, doubtless, might always have been righteously called *expatiating* Brown; but, at the age of eighteen, when he wrote his *Observations,* he must have been expatiation itself. At that age he belonged to a select circle of warm-hearted, warm-headed boys that, nightly, took counsel over their tea-cups for the benefit of the human race. Young men of an Edinburgh mutual improvement society that write, and read, and debate over tea the greater part of the night—such young men cannot choose but expatiate. And it is just for such quality that no one can look into the Lectures of Dr. Thomas Brown without being struck with admiration at the structure of their every paragraph. Clause after clause—how happily they dovetail—how happily they fit into each other — each falling so neatly, naturally, into a place that just seems made for it. They are extemporaneous, these Lectures: their author has just got

his Chair, and they have to be made. They are seen (or heard) to rise, ever, as it were, with a certain hollow swell; but they always overbrow failure, and even exact, suddenly at times, an involuntary praise. Now, as was the writing of Dr. Thomas Brown, so was his speech. It was nothing if not refined. His biographer expressly states, "Dr. Brown's conversational style was not less correct than his written discourse;" and "even from the time he was a boy, Dr. Brown was most fastidious in everything he wrote." So it was, probably, that in such references, there was talk of the manner of Brown "bordering on pedantry." "He conceived," it seems (*Life*, p. 335), "that every philosophical writing ought to resemble a system of pyramids, each a whole in itself, and all to constitute one great pyramid!" It is this pyramidal writing, pyramidal speaking youngster under twenty, that we are to suppose approaching Dr. Darwin, hat in hand, to set him right. And his accost is a very boyish one. He repudiates, as regards *Zoonomia*, "disrespect to its ingenious author, by whom he has been often instructed, and always delighted;" and exclaims of this author, "may he long continue to delight, and instruct the world, and prove, that, whatever influences age may have, in enfeebling the body, it has little, in destroying the energies of *a well-regulated mind!*" (Ah, "a well-regulated mind!" it was a category then!) These are just a few words; but they are pointed as Brown points them, and may afford some slight conception of the lavish way in which the young man somewhat indiscriminately shakes down his commas. That, really, is peculiar! But better than that, they fairly give to view the natural courtesy of the young man. For, all through life, Brown was naturally and essentially modest. As schoolboy, student, medical practitioner, occasional lecturer, professor, he was always characterised by a winning sobriety and propriety of

behaviour. In no one of these—in no one relation of life, whether external or internal, was he ever otherwise. Sneerers might find in him "an affected politeness" and a vein in his conversational pleasantry that lacked freedom; but always and everywhere he made the best men around him friends. More than one of these have left it on record that they regarded him "as a man of the most perfect worth." And these men, moreover, were the best men of his time, a Gregory, a Playfair, a Leslie, a Stewart. Nor was it any drawback to his modesty, that he always added to it *Anstand* (propriety of pose). With all his "amiableness," his "evenness of temper," "his mild and gentlemanly manners," "he always consulted the dignity of his own character, and never allowed any one to treat him with disrespect." In his own day, doubtless, he was received only with the enthusiastic plaudits of his students and the most flattering consideration on the part of all around him; but he never knew what an authority in philosophy he was to become for the public—never dreamed that these Lectures of his, without the benefit of "his last corrections," "not prepared for the press," but only "for the purpose of academical instruction," "the subject of many of them never reflected upon till he took up his pen," and "many of his theories occurring to him during the period of composition"—never dreamed that now, well on for a century after his death, the nineteenth edition of them should be the current copy in the hands of those who read. In his own day this was not so. "As an author," his biographer laments, "his fate has been singular, and, during his own lifetime, hard. None of his works, while he was alive, ever attained any great popularity; and, in the reviews of the day, the name of Dr. Brown is almost the only one of any celebrity that is never to be found." As regards his philosophy, however, this is not to be won-

dered at; for in that kind he had himself published only his *Inquiry into the Relation of Cause and Effect* (the success of which, indeed, on the supposition that here the previous criticism was right, may be thought to have been only too good). It was only of his poetry that Brown himself could, for the most part, have thought at any time that the idea of neglect occurred to him. And of his attitude in that regard, his biographer observes: "It is delightful to witness the calm confidence with which Dr. Brown anticipates the fame which, though he was not in this world to enjoy it, was to be!" "There is a moral sublimity in the noble spirit with which he repels the intrusion of scorn and discontent, and expresses his conviction of the substantial benefit that he had derived from the severity and injustice of his contemporaries!"

What was the character of the Dr. Brown who presumed to address to the author of *Zoonomia* his own *Observations* on it, will now be plain. We have to bear in mind here, however, that it was not the distinguished "Professor" whom Dr. Darwin had to meet, but only an unknown youth with an essay written at the age of eighteen. This youth, no doubt, writes with quite an exemplary politeness of dignity; but still it is a youth that writes, and he writes with all the self-complacency of the leader of the mutual improvement society. I know not that what he writes can be called specially good. There are not a few weak spots in the fortress of *Zoonomia*, and the future philosopher is able to confront them with that acuteness that is essential to his nature. Perhaps the best hit I remember is this. Almost the main position of Dr. Darwin is that "ideas are motions of the extremity of some nerve of sense;" they are "a contraction, or motion, or configuration of the fibres which constitute the immediate organ of sense." Now, that

being so, says Dr. Brown (*in effect*), how about "different ideas with the same contraction"? The contraction that is the idea sound follows in me on the vibration of a bell that is heard; but when a second vibration takes place, there is exactly the same contraction, but this time with the addition of extraordinary new ideas, memory, time, number! How is that? A poser of this kind was not likely to conciliate the all-successful veteran; and there might be also some little provoking accent of battle—with all his polish—on the part of the not untriumphant youth. This latter had felt his power in these improvement meetings, and had even already shown, as to his Professor, a certain craving for the grip: "the disciple longed to combat his master," are the words of Dr. Welsh, the "master" being Stewart!

In regard to the correspondence with Dr. Darwin, Dr. Welsh observes that it evinces on the part of Brown "a degree of ingenuousness and dignity of mind highly honourable." He desires us to know this: "As the letters of Dr. Darwin were not intended for publication, I shall insert only such extracts as are necessary to make the letters of his youthful correspondent in any degree intelligible, and as cannot in any degree be injurious to the fame of their ingenious author." "Dr. Brown's first letter is dated some months before he was nineteen years of age,'" and it opens in this way—

"SIR,—In acknowledging the delight which I received from the perusal of *Zoonomia*, I only agree with the public voice. I am, however, surprised, that while every one has been delighted, no one as yet has answered—The transition is natural from passive admiration to a strict examination—Such, at least, was my mental history on reading—The reasoning appeared to me in some passages more specious than solid—I, therefore, for my own amusement, marked down my observations—My name is unknown to you, and unknown, indeed, in general to the literary world—It is not, however, the combat of names, but of arguments, that Truth regards—I will, therefore,

with your permission, send you a copy of the manuscript, in the hope of having misstatements, if any there be, corrected—You will have the goodness to let me know immediately whether it be agreeable to you to take the trouble of reading the manuscript; and if so, to inform me as soon as you conveniently can after receiving it."

A little peremptoriness here, perhaps, that might not prove altogether agreeable after the gall of "more specious than solid," and the general *stilt* of these *propos* about transitions, and names, and arguments, and truth, and that offered a result only of "amusement." Still, Dr. Darwin seems, directly on receipt, to have sent a very proper reply, expressing all polite willingness to receive, and read, and "correct any inaccuracies," etc.

Brown, however, has to wait exactly another month before he can write Dr. Darwin again—

"DEAR SIR,—I am extremely sorry that, after having placed you in that disagreeable state of suspense which the unexpected attack of a stranger must in some degree occasion, the transmission of the manuscript should have been so long unavoidably delayed—There are some terms, absurdity, etc.—Such unavoidable harshnesses, I trust your candour will forgive—Your remarks will, of course, be limited to the premises from which my reasonings are drawn, to the fair or unfair manner in which I have stated your own opinions."

The young man has his head a little in the air here, and is perfectly unconscious of any supererogatory stab which he may give, or of the possible impertinence of the imposition of limits just suitable for himself! But we have now to see the effect of the perusal of the manuscript on Dr. Darwin. This, however, we cannot see *directly*. Brown's last letter was dated November 27, and Dr. Darwin's reply, after he had read the manuscript, seems to have been written on December 2. That is, Dr. Darwin must have read and written at once, for Derby and Edinburgh were very far apart in those days. And what he wrote, we can judge to have been tremendous; for we are only allowed partially to see Brown in return, and Dr. Darwin

himself (in this reply) not at all! Of this latter Dr. Welsh says, "As this letter could not have been designed for publication, I do not feel justified in inserting it; but the answer of Dr. Brown must not be suppressed!" Something, however, of the nature of this unseen reply of Dr. Darwin's we may *guess* from certain expressions in the rejoinder of Dr. Brown. Dr. Brown, too, must have written at once; for the date now is only December 5.

"SIR,—I this morning received your letter. Its asperity I might possibly have retorted, had I been in the slightest degree irritated by it; but it was too profuse to excite any other emotion than that of surprise.—From the contemptible light in which you view the manuscript it can no longer be interesting to you. I shall therefore expect to receive it by the first conveyance. I am, Sir, yours."

So far as we may venture to judge of the probable unpleasantnesses that may have invaded his ear, a very excellent self-control must have been exercised by the young man here. Brown, indeed, was never wanting to himself in that sort of formal dignity. One of those who started the *Edinburgh Review*, and even writing the leading article in its second number, he was offended with "some of the liberties that were taken with one of his papers by the gentleman who had the superintendence of the publication of the third number, and he withdrew his assistance from the work." "Though repeatedly and earnestly solicited to join again, he constantly declined." Dr. Welsh remarks of Brown's article on Kant, which is here in reference, "every one who has attended to the subject will allow that he has made it as intelligible as its nature admits;" and he presently declares of Brown that he "dipped deeply into the German philosophy!"

Evidently, however, so far as the position itself is concerned, Darwin must have read in a fume and written in a fume—must have written, in fact, rudely or even coarsely. We are not allowed to see much more of the

correspondence,—which, after all, seems to have continued a little longer,—but we may venture to use for inference an expression or two in later letters on the part of Dr. Darwin, as, "I shall mention those of your objections which I can recollect—you would write English well if you would lay aside the nonsense of metaphors—metaphors, in an argumentative philosophical treatise, are a disgrace." This of December 20, seems in reply to Dr. Brown of the 5th; and on the 28th Brown's pen is again at work. "You accuse me," he says, "of descending to personalities;" but he emphatically denies any personality which might not be called such simply as "confuting an opinion," and as tantamount then to the assertion "that the author of that opinion is wrong." And, no doubt, that for Brown is true. The hit about metaphors Brown takes meekly. He is "conscious that there was a superabundance of metaphors in the papers sent," they being "the first taken." "I have always found it best," he explanatorily adds, "not to chill the ardour of composition by pausing to correct, but to wait till the whole be finished, and then to prune whatever is luxuriant!" He is staunch to the loyalty of his objections: "I should be guilty of an attempt to deceive the world, if I were to profess a belief to which my conscience could not assent;" and he is indignant that Darwin should hint that "truth was not his object in publishing," and that he had been "actuated by sentiments of personal ill-will." Darwin seems really to have thought the latter allegation true; for, duly to impress Brown with a sense of the importance of the personage he (Brown) was addressing, he intimates in the course of his surrejoinder of the 12th of the following month—what has very much the look of being only *lugged in:* "My second volume has brought me many patients from even London and distant parts of England,

and very many consultation letters from both the Faculty, and from others." Dr. Darwin adds in a postscript, "I do not recollect any other of your objections, but I thought them all easily answered—your syllogism amused me much."

Brown, nine days later, again readily replies, with courteous intimation: "It gave me pleasure to hear of the general approbation which your work had met with!" "But," says Dr. Welsh, "no answer seems to have been returned to this masterly letter, and here the correspondence terminated."

On the whole, from what of this correspondence is given, one is led to believe that Brown, if young, was admirably self-controlled; while, on the contrary, for his part, Darwin, then within five years of his death in his seventy-first year, was, in some degree, unguardedly violent and rude. The biographer, in regard to both combatants, seems to sum up thus: "I know not if, in the history of philosophy, there is to be found any work exhibiting an equal prematurity of talents and attainments; in a controversial point of view its interest is greatly diminished, from the lower estimation in which the theory of his opponent is now generally held." And we here, in 1893, can only admire how Fortune, in truth, *does* turn her wheel. Herr Dr. Krause, in 1879, chronicles the existence of a special society for the rehabilitation and diffusion of the views of the elder and greater Darwin (him of the *Zoonomia*, to wit!), while Brown's book is as good as null—or, indeed, if only for its extraordinary punctuation, worse!

CHAPTER IV.

DR. ERASMUS DARWIN.

It is not, of course, in contemplation to write the life of Dr. Darwin here, but only to signalise such traits in connection therewith as may prove illustrative on the general theme. It is still worth while knowing, however, that, born in 1731, Dr. Erasmus died in 1802, when he was in his seventy-first year. He was twice married. His first wife, wedded in 1757 when she was only eighteen, he being twenty-six, died in 1770. His second wife, a rich and beautiful widow, he married in 1781, he being fifty and she thirty-four. But, in the interval of eleven years, it seems to be said that he had two illegitimate children. Of the five legitimate children spoken of—to at least some of them he seems, as a father, to have been at times harsh and unjust. Charles appears almost even to resent as much in his own father's reference, that of Dr. R. W., and the reader may still have in mind the difficulty with Miss Seward, as concerns the son who is supposed to have committed suicide. To that son, Erasmus, Charles himself says that Dr. Darwin "was not always kind;" while to Dr. R. W., "he acted in his youth harshly, imperiously, and not always justly." He must be allowed to have had at least the family pride in his children, for he is at the expense of publishing certain

literary productions of his sons, as he calls them, "*Mr.*" Charles and "*Dr.* R. W." Darwin; and for this last he bestirs himself to get F.R.S., writing in that reference to the great Josiah Wedgewood the following somewhat *knacky* letter: "When I want anything to be done (says an old tutor of mine), I look out for a man who does the most business of his own; for if I can prevail on him to undertake it, it is sure to be done soon and well! Hence I apply to you." (*A Group of Englishmen*, p. 253.) I fancy, on the whole, Dr. Darwin always was *knacky* — knacky even with his own overbearing arbitrariness!

Dr. Erasmus Darwin had evidently all his life his profession at heart, and never any liking to have its returns interfered with. So it was that he feared poetry might imperil medicine; and it was only in the year of his marriage with the widow that he allowed the first part of the *Botanic Garden* to appear. One authority points to this lady's jointure of £600 *per annum* as the determining consideration here. He himself made then an annual thousand by his practice, and had at least no occasion to be mercenary, though, doubtless, as said, he was not quite easy about the effect of his poetry. Charles Darwin is somewhat inclined to defend his grandfather in the imputation that has money in regard; but Dr. Erasmus, really, seems always, on the whole, to have encouraged in himself a very prudent and proper respect for what held of the purse. Referring to *Zoonomia*, he writes to his son that he thinks of publishing it "in hopes of selling it;" and we have already seen how concerned he was that Dr. Thomas Brown (not then Dr.) should know how much improved a professional reputation his *Zoonomia* had brought him. In fact, Dr. Erasmus is always pretty well seen to have had in mind the ordinary forethought that a practice

brings. He is lucky enough at the start to save a local magnate from the sentence of death pronounced upon him by the leading practitioner, who actually, in consequence, is obliged to pack up and leave the neighbourhood. He was bold and determined in his treatment, sparing neither his lancet nor his digitalis; the former of which he regrets, on his death-bed, not to have had, himself, more of (he calls it in *Zoonomia*, ii. 197, "the anchor of hope"); while, for its part, the latter (digitalis) is again and again praised by him, and his own receipt for the infusion of it carefully detailed (*Botanic Garden*, ii., Note).[1] Miss Seward is full of the relative particulars in these matters. The local magnate saved was Mr. Inge of Thorpe, a gentleman of family, fortune, and consequence, then attended by the celebrated Dr. Wilks of Willenthal. Dr. Wilks, for many years the established medical authority of Lichfield, had pronounced the case of Mr. Inge hopeless, and even left it as such. And it was now that the intervention of Dr. Erasmus Darwin "gave the dying patient back to existence, to health, prosperity, and all that high reputation which Mr. Inge afterwards possessed as a public magistrate." No wonder that Wilks took himself off, and left the field to Erasmus, who exhibited "strength of mind and fortitude unappalled!" "The perpetual success which attended this great man's deviations from the beaten track, enabled him," Miss Seward calmly intimates, "to shake all mists from his reputation, as the lion shakes to the air the dewdrops on his mane!" He seems to have had a browbeating, peremptory way with his patients, that not unfrequently infused into them even awe. Other practitioners have been heard of with some such similar, but, doubtless, much more exag-

[1] This is worth looking at in these days when digitalis has come again so much to the front.

gerated bearing; the contemptuousness with which they affect to regard their patients, or even, walking round them, to look them through and through (ending, perhaps, with a spit!), would appear to strike these latter almost with a sense of omniscience. Erasmus comforted a brother practitioner who stammered (he stammered himself) by assuring him that his impediment in speech would "not at all injure him, but rather on the contrary—by attracting notice." It has a relevant medical interest here to be told that a "Dr. K. supported his business by perpetual boastings;" and to be co-ordinately assured that "the world is not governed by the clever men, but by the active and energetic." We learn from the narrative that Dr. Erasmus gained for himself not a little wonder in the eyes of Miss Seward and Lady Northesk by declaiming to them about the restoration to health to be produced in the latter by the transfusing into her veins of the willingly sacrificial blood of the former—only it was unfortunate that there was no possibility of his procuring a necessary instrument that would be delicate enough! I suppose it is characteristic of Erasmus, too, that, towards the end of *Zoonomia*, when he is explaining why there are more boys than girls born, an art of "Calipædia" is announced as "*privately communicable!*"

Dr. Erasmus was the head of the Lichfield Botanical Society, and in its name sent "various observations" to the "periodical publications" of the day. The Lichfield Botanical Society, made by himself, consisted of Boothby, Jackson, and — himself! This Jackson seems to have been a forlorn creature—"a Proctor in the Cathedral jurisdiction," "of the lowest possible origin, and wholly uneducated," with "habits of ebriety," etc.,—in short, a sort of *un*holy "Holy Willie"!

Miss Seward is tolerably particular about Dr. Darwin's

own person, manners, and habits. In person he was tall, corpulent, heavy-limbed, heavy-faced, pock-pitted, with a stoop in the shoulder, and without pretension to either beauty or symmetry. Acid fruits, with sugar, and all sorts of creams, and butter, were his luxuries; but he always ate plentifully of animal diet. Such liberal alimentary regimen, indeed, he prescribed to all, even to infants. *En revanche*, however, he avowed a conviction of the pernicious effects of all vinous fluids—an absolute horror of spirits, of all sorts and diluted as they might be. He was not famous for holding religious subjects in veneration, and seems to have denied human accountability as a gloomy Calvinistic superstition. He got soon sore when opposed in argument or in action; and was apt in such circumstances to take his revenge in sarcasms of a very cutting edge. He was prone to suspicion, and of extreme scepticism in regard to human truth. Even generally his manner of speech was not pleasant to individual self-love. Colloquial despotism grew upon him; and he was absolutely intolerant of egotism in others, meeting it indeed with jocose but wounding irony. He could not joke, however, when he himself was assailed. The "Loves of the Triangles," a burlesque imitation of himself, annoyed him. "Instead of joking on it," says Miss Seward (p. 208), "he pretended never to have seen or heard of it." And the grandson (Charles), who had come to see differently, cannot resist the remark here: "On the subject of this satire, Dr. Darwin wanted presence of mind!"

He is described, nevertheless, as having been professionally hospitable, generous, and to the poor charitable. And should any one invidiously accentuate *professional* here, the thirteen years with his first wife may, for their testimony, be triumphantly pointed to. She loved him, and she died happy. "He has prolonged my days," she

cried, " and he has blessed them." Her conviction to the end was that, with any other man, she would not have lived " one-third of these years." He had a quick sense of wrong, and hot indignation at injustice. Like son and grandson after him, he had an intense horror of slavery, and was keen for the liberties of the people. An Englishman in that! he set the example to his descendants of being a Liberal or Radical, and—without faith in the truth of revelation. Further, also, he was an early riser. With his profession to live by, it is not to be objected to him that, knowing the printing of poetry to be fatal to the practice of medicine, it was his resolution to conceal the former until it should be beyond all danger in consequence of " the impregnable rock on which at last he found his medical and philosophical reputation placed." We have already seen something of his position in all these references. He was undoubtedly a man of determined will and quick intellect, who could not but succeed in such a profession as medicine. His books show him in that capacity as a man of somewhat superficial generalisation, but with boundless trust in the success of his own bias. No doubt, in consequence of both, he must have been, locally, an object of much popular admiration, as he wheeled himself along in the machine which, with his love of mechanics, he had specially invented for himself—to the eventual fracture of one knee-pan, however! It is possible, too, that some humorous saying of his told might have occasionally given wing to his professional notoriety, as, for example, that Unitarianism was " a feather-bed to catch a falling Christian! "

So far as concerned the realm of thought, thought proper, pure thought, his reading and education were insufficient; and these hasty, scattered, ungrounded *propos* of his cannot be accounted to philosophy. In poetry,

very evidently, his ambition was to "transcend the numbers of Dryden and Pope," and so "bring the couplet measure to a degree of sonorous perfection." Nay; in a certain way, has he not even succeeded in this? Every one knows that there is a certain sing-song, a certain rhythmical see-saw, that is common to all the heroic verses of both Pope and Dryden. They themselves are respective masters: they can make it general—vary it into success and beyond monotony. But it is just this monotony—this monotony alone and nothing but it—that Erasmus Darwin would realise and complete. That single thing, the sing-song of Pope and Dryden, must be taken alone by itself in hand, and evenly divided into its very smoothest and most characteristic alternation—

> "Roll, silver butterflies, your quivering wings;
> Alight, ye beetles, from your airy rings;
> Ye painted moths, your gold-eyed plumage furl,
> Bow your wide horns, your spiral trunks uncurl;
> Glitter, ye glowworms, on your mossy beds;
> Descend, ye spiders, on your lengthened threads!"

So far as rhythm or flow is concerned, these verses will perhaps, to some extent, illustrate what has been assigned as characteristic of them. They will almost show, too, that let the success of Erasmus be as it may, he has not yet got above the helplessness of filling up to measure with supplementary epithets, especially at the end of the line: quivering wings, airy rings; mossy beds, lengthened threads; and elsewhere, folded vest, throbbing breast; starry zone, golden throne; drooping head, leafy bed; tossing wave, watery grave—

> "Again the goddess strikes the *golden* lyre,
> And tunes to wilder notes the *warbling* wire."

It was, no doubt, his botanical love that led Erasmus to sing, in the *Botanic Garden*, the grounds around his

own dwelling-house, which he had so admirably laid out, —would it be too much on one side to say that it was his taste for mechanism that still found itself in his mechanical verse? Of anything like a true poetical taste Erasmus, really, does not seem to have possessed a vestige. He preferred "Akenside's blank verse to Milton's," as "of higher polish, of more classic purity, and more dignified construction." He "could not read Cowper's *Task* through," and—"he particularly disliked Milton's sonnets!"

To enter here into any detailed exposition of the works of Dr. Erasmus Darwin would be out of place. But it will be well, perhaps, to signalise a few of those tenets in which he may be said, if not always to have preceded or anticipated, at least to have resembled, Charles.

We have already heard about Dr. Ernst Krause's *Essay on the Scientific Works of Erasmus Darwin.* We have heard that it is "a glorifying of the elder Darwin." How eagerly Charles and his brother took to it, the former adding to the translation of it into English,—which he had begged to be allowed to make, and which he had committed to Mr. Dallas,—a supplement on the life of Erasmus larger than the Essay itself,—all this we have already heard as well. Now the point here is this. This Krause little book comes to us so absolutely, in every way, with the evolutionist stamp upon it, that, beyond all possibility of either question or cavil, its authority in every relation to the views concerned, must be regarded by us as equally absolute. When Dr. Krause declares, therefore, that Charles Darwin "has succeeded to an intellectual inheritance, and carried out a programme sketched forth and left behind by his grandfather;" that "almost every single work of the younger Darwin may be paralleled by at least a chapter in the works of his ancestor;" that "heredity, adaptation, the protective

arrangements of animals and plants, sexual selection, insectivorous plants, and the analysis of the emotions and sociological impulses, nay, even the studies on infants—are to be found already discussed in the writings of the elder Darwin, who, a Lamarckian before Lamarck, first established a complete system of the theory of evolution," —when Dr. Krause, I say, declares all this, then there is no choice left for us (in view, namely, of the translation and the appended Life) but to conclude that such is the declaration of Charles also, as well as of his brother Erasmus, who specially associated himself with the Krause publication, and of every one that is in any way in relation. Nor do we at all wonder, consequently, when we hear Dr. Krause further averring that there is an actual party specially formed in these days for the restoration and revival of the older doctrine. Probably, with the single exception of what Mr. Darwin means by the one word "*modification*" or its implied principle at least, there is no genetic hypothesis in the works of the grandson that will not be found, at greater or less length, in the works of the grandfather. And even the authority of Mr. Francis Darwin can be pretty well quoted to the same effect. The following is his declaration in a note at page 189 of the second volume of the *Life and Letters:* "Erasmus Darwin first promulgated Lamarck's fundamental conceptions. . . . But the advocates of his claims (Erasmus's) have failed to show that he in any respect anticipated the central idea of the *Origin of Species.*" It is just possible that the shade of the haughty Erasmus may have no reason to condole with itself on the loss! Mr. Darwin himself says (*Life*, etc., ii. 371): "Personally, of course, I care much about Natural Selection; but that seems to me utterly unimportant compared to the question of Creation *or* Modification."

Especially in view, then, of the ready accessibleness of

this book of Krause's, and of the convincing clearness and ample length with and at which he establishes the parallel between the grandfather and his grandson, it must appear superfluous to repeat any such evidence here; but, as said, we cannot omit mention of a few of the leading keynotes.

What Erasmus maintains of lime is curious, and it underlies, probably, his *e conchis omnia*. He holds that "all the lime of the earth originated from living creatures, corals, shells," etc. etc.; and so it interests him greatly as having "taken part in the pleasures and pains of life." Actually, "the limestone mountains of England appeared to him as mighty monuments of past delight!" He reminds more of Charles when, as regards animals, he points to rudimentary remains of obsolete organs, and asks the question, "Do some animals change their forms gradually, and become new genera?" Do not the "useless or incomplete appendages to plants and animals seem to show they have gradually undergone change from their original state?" Are not "all the supposed monstrous births of nature but remains of their habits of production in their former less perfect state, or attempts to greater perfection?" And—"Do some genera of animals perish by the increasing power of their enemies?" Erasmus anticipates the *struggle!*

Again, in regard to animals, may there not have happened, he suggests, "changes in some parts of their bodies which may have been effected to accommodate them to new ways of procuring their food?" A question, plainly, identical with the one absorbing, great question of the grandson, Charles,—only that he would have put it differently. He, Charles, namely, would not have spoken of changes which *may have been effected to accommodate them* to new ways of procuring their food, but of changes which, *being effected* (to wit, *casually*), *did* accommodate

them to new ways of procuring their food. And that is the difference between the two theorists which has been already signalised,—"the central idea," namely, "modification," which to Charles depended, in the first instance, simply on *casual individual variation.* Still, it was the same problem that occupied the thought of Erasmus. He asked whether so and so was useful, not to us, but to the organism itself? What favoured its wellbeing—could it have been acquired "by an internal impulse and gradual improvement"? It was only Lamarck, however, that would have agreed to that question, and not Charles. That, plainly, assumes a movement from within; whereas to Charles the critical movement was only from without. To that he was, so to speak, *committed*; life for him was to be submitted to physical law, just as whatever was in space was to be submitted to the single physical law of gravitation. That, even as so put, was the one sole enterprise of Charles Darwin. It is the look within, or the look without, that differentiates here the two men, grandfather and grandson. They exchange these their attitudes, however, in regard to instinct. Instinct to Erasmus is due to imitation from without, while to Charles it is beyond all doubt an inherited habit from within. Both opinions in that regard, plainly, admit of much question and discussion; not in place at present.

It is a fixed belief of Erasmus, however, that, in this connection, animals *learn* before birth certain modes of ordinary actions which *appear* instinctive, as swimming, walking, even swallowing. So, he would seem to intimate, the fœtus, in order to relieve the "tedium or irksomeness of a continued posture," attains to stretching, yawning, etc.! Through touch, this same fœtus, he thinks, may have gained "some ideas of its own figure, or of that of the uterus, and of the tenacity of the fluid that surrounds it!" Imitation as such, nevertheless, is

so powerful an idea with Erasmus, that he sees it (imitation) pass from cell to cell to the appearance of even simultaneous disease! Emotions are expressed by imitation resting on fundamental organic conditions ("all expression," Charles says later (ii. 142), "has some biological meaning"). Fear, for example, is but the repetition of our first cold shivering at birth; as our smiles are but the ghosts of the relaxation of mouth and face from repletion on our first meal! Beauty is wholly conditioned to us by the undulation of our nurse's bosom. And so, said Sheridan, "I suppose that the child brought up by hand would feel as much at the sight of a wooden spoon!" It is certainly surprising in these days of artificial lactation that drunkenness is not upon the increase from love—of the bottle!

Erasmus has much here, in a similar reference, about lambs wriggling their tails, cats playing their claws while purring, etc. etc. He will not at all hold with the capsular theory of embryos within embryos—nucleus, nucleolus, nucleololus, "like the cups of a conjuror"—to the *in*volution into a single atom of the universe, with *e*volution and re-*in*volution of universes without end, as seems to be a favourite opinion of Mr. Huxley's. Erasmus declares himself to see in such ideas only the fact of impossible minuteness. It is just possible, therefore, that the grandfather might have rejected the very "gemmules" of his grandson; who, however, hopes (i. 93) that some one hereafter may be led to verify the hypothesis (Pangenesis), in which case, says Mr. Darwin, I shall be found "to have done good service!"

Erasmus, like Charles, is perfectly aware of the extraordinary results of intentional breeding, as in horses, dogs, rabbits, pigeons. And he can see such changes become hereditary; the biceps of the smith, the calves of the chairman, the back of the rope-dancer—even

the taillessness of the dogs of Naples and Rome, from the practice of docking them! He tells of the effect of the seasons, too, as on hares and partridges. It is undoubtedly a doctrine essential with him that "the individual, by its own exertions, acquires forms which it sends on;" and in this it is Lamarck he anticipates, and not Charles; who would substitute for "by its own exertions," *by its own accidents!* "When we enumerate the great changes produced on the species of animals before their nativity; these are such as resemble the form or colour of their parents, which have been altered by the cultivation or accidents above related, and are thus continued to their posterity;" this is a bad sentence of Krause's (p. 175); its meaning may seem to lie in the direction of the "central idea," "modification," and it certainly includes—what Charles's theory includes—the modification of accident; but still, as an expression of Erasmus, what is mainly in reference are the modifications of habit and cultivation. Not but that Erasmus, quite as much as Charles, thinks of cattle and sheep—and, naturally, of pouters and fantails as well; neither does the former, any more than the latter, exclude cultivation applied to the individual difference of accident. To Erasmus, too, sex does much. It arms the male with weapons in defence of the female; and it endows the female with irresistible bloom and grace for the seduction of the male. So it is that boars, which are not naturally carnivorous, have acquired tusks; and so it is also that against the oblique upward stroke of such tusks, they get provided, through experience and time, with a thick horny skin on the shoulder. Just so "the horns of the stag are sharp to offend his adversary, but are branched for the purpose of parrying or receiving the thrusts of horns similar to his own" (Krause, pp. 178–79). Device and contrivance may seem a little double-edged

here—almost a simplicity of cunning that must defeat itself; to what end a provision to foin, if it is at once met by a precaution to foil! And which is first, or, rather, which *was* first? (Or have both been, mischievously, co-determined by a mere amateur of fencing?!) "The birds which do not carry their food to their young, and do not therefore marry, are armed with spurs for the purpose of fighting—as cocks and quails. It is certain that these weapons are not provided for their defence against other adversaries, because the females of these species are without this armour." This needs an explanatory word, but it can only mean: The cock does not marry in the sense of pairing (Chaunteclere will have nothing less than a harem of Pertelottes); but against external adversaries he could not possibly defend them all; and if his spurs were a defence of that kind, the females for success would require to be similarly armed too. That they are not so armed shows plainly that the spurs of their sultan are only meant to secure his cortege from the approaches of any other marauding sultan. "*The final cause of this contest amongst the males,*" it is added (p. 179), "*seems to be that the strongest and most active animal should propagate the species, which should thence become improved.*" And this is as plain a reference in Erasmus, as any in Charles, to "the survival of the fittest."

CHAPTER V.

DR. ERASMUS DARWIN—CONCLUDED.

It is one of the Lamarckian dogmas of Erasmus, that "the means of providing food has diversified the forms of all species of animals." And this is illustrated at great length by reference to the hardened snout of the grubbing swine, the elongated nose of the elephant (for the enabling of it to drink and to pull down branches to eat), the claws and talons of the beasts of prey, the rough tongues of the browsing cattle, the beaks and bills of birds (respectively, as needs were, hard or soft, long or broad, sharp, etc.): "All which seem to have been gradually produced during many generations by the perpetual endeavour of the creatures to supply the want of food, and to have been delivered to their posterity with constant improvement of them, for the purpose required." Even wings seem to Erasmus but as results—results of the endeavours of the feet for speed; and, similarly so, many other diversified forms, as length of fin to the flying-fish, spread of membrane to the bat, hard or armed shells to the tortoise and the echinus marinus. The snake, and wild cat, and leopard are so coloured as to resemble dark leaves and their lighter interstices; and moths and butterflies are painted like the flowers which they rob of their honey.

"These colours have, however, in some instances"—

and this is very interesting—"another use, as in the black diverging area from the eyes of the swan; which, as his eyes are placed less prominent than those of other birds, for the convenience of putting down his head under water, prevents the rays of light from being reflected into his eye, and thus dazzling his sight, both in air and beneath the water; which must have happened if that surface had been white like the rest of his feathers." (How about the "black swan"—*pace* all the other divers?) In the same way we have the various colours of eggs rationalised, and then this—"The final cause of these colours is easily understood, as they serve some purposes of the animal, but the efficient cause would seem almost beyond conjecture." The efficient Cause!

The efficient cause of these and all things is, according to the spontaneous, unreflected, instinct of humanity, simply the will of God.

According to philosophy (which on that head, however, has a good deal more to say for itself), that cause and that will could only be a reasoned universe, a rational object, which, like God Himself, the rational subject, could not—in fact—*not* be!

Charles Darwin will have neither interpretation. In explanation (just of all and everything), he will take at once a formed organism—*into the premises of which he will simply not inquire*—and once in possession of this organism (which, too, *without inquiry*, is to be endowed with the power of propagation), he will see the accidents of the individual (and every individual *has* accidents—"I believe most beings vary at all times"[1]) accumulate and accumulate, by the further known necessary fact of successive propagation—accumulate into a new en-

[1] *Life and Letters*, ii. 123: "I believe most beings vary at all times enough for selection to act on." But how if every variation always returns, less or more, to the original?

semble which is a new species; and this is Natural Selection, "the law of Natural Selection that has now been discovered."

"The old argument from design in nature—fails," he says, "*now that the law of natural selection has been discovered!*"

Leaving, however, what relates further to animals, let us pass to a word or two of the numerous similar references to plants. It is by what concerns security that he (Erasmus) is led here also: "The contrivances for the purposes of security extend even to vegetables, as is seen in the wonderful and various means of their concealing or defending their honey from insects, and their seeds from birds" (Krause, p. 182). At first, he opines (p. 185), there would be few vegetables, but those would intermarry, and increase. There would be contests among them for light and air above, as for food and moisture below — leading necessarily to changes of structure in them. Single bulbs would assume to themselves more bulbs—would become at last, as trees, a compound of many bulbs — each "a swarm of vegetables." Necessarily there would be varieties among them. Thus some, too weak of themselves, would "learn to adhere to their neighbours, either by putting forth roots like the ivy, or by tendrils like the vine, or by spiral contortions like the honeysuckle; or by growing upon them like the mistletoe, and taking nourishment from their barks, or by only lodging or adhering on to them, and deriving nourishment from the air as Tillandsia. This plant never germinates on the ground, but is borne by the wind till the filaments of its long capillary plume are caught and entangled." On all these contrivances of plumes, hooks, etc., Erasmus is specially full. But still to him there must be contest—"struggle." Even for that element of theory (as we have

seen already at pp. 45 and 49), Erasmus might have sufficed Charles, without resort to Malthus. The struggle entails for Erasmus "more exquisite pleasure;" and "higher organisation is the result." Even when internecine, "it serves to increase the sum of happiness of the survivors." So it is that Erasmus is able to put himself quite at home with the "double edge" we have already seen. If, on the one side, there are admirable and perpetually improving appliances for defence, there are, on the other side, equally admirable and equally perpetually improving expedients for attack: so that what is permanent is alone battle, *πόλεμος πάντων μὲν πατήρ*. "Swiftness of wing has been acquired by hawks and swallows to secure their prey; and a proboscis of admirable structure has been acquired by the bee, the moth, and the humming-bird, for plundering the nectaries of flowers. All which seem to have been formed by the original organic filament, excited into action by the necessities of the creatures which possess them, and on which their existence depends." And so, the strain continues, considering all these things, "would it be too bold to imagine that all warm-blooded animals have arisen from one living filament which THE GREAT FIRST CAUSE endued with animality, with power of acquiring new parts, attended with new propensities, directed by irritations, sensations, volitions, and associations; and thus possessing the faculty of continuing to improve by its own inherent activity, and of delivering down those improvements by generations to its posterity, world without end?" *Respective* filaments there may be, and, so, different the one from the other, for the various tribes, warm-blooded, cold-blooded, insects, vermes, plants, etc.; but still, "As the earth and ocean were probably peopled with vegetable productions long before the existence of animals; and many families of these

animals long before other families of them, shall we conjecture that one and the same kind of living filament is and has been the cause of all organic life?"

So much for organic life, though this is accompanied by much else in regard to spontaneous generation, sexuality and asexuality, etc.; but, as we have already seen in reference to lime, Erasmus has not grudged to direct his regards to the whole also. The world is to be supposed due to generation from smalls to smalls rather than from creation at once—"produced from very small beginnings, increasing by the activity of its inherent principles rather than by a sudden evolution of the whole by the Almighty Fiat. For it would seem to require a greater infinity of power to cause the causes of effects than to cause the effects themselves." So Hume at one time held (*Inquiry*, vii. 1) that it argued "more wisdom in the Deity" to conceive a world, not further dependent on Himself, but, for advance, with inherent principles of its own. It is with as much as this in his mind that Erasmus exclaims, "What a magnificent idea of the infinite Power!"

Dr. Darwin opens his *Zoonomia* with a motto from Virgil—the well-known four lines from the sixth Æneid, according to which a spirit within nourishes all, a mind, infused throughout, animates the mass. And his very first paragraph reprobates those who, "idly ingenious, busied themselves in attempting to explain the laws of life by those of mechanism and chemistry, and considered the body as an hydraulic machine, and the fluids as passing through a series of chemical changes, forgetting that animation was its essential characteristic." To this he had a perception which was wanting to Charles—a perception possessed as yet only by one other known to me. Cause he saw, as cause, was a category confined to the lower elements, and had no place in the

higher. In things mechanical, for example, cause is but a *tertium quid* of identity, uniting, as so far identical, two things otherwise different. Thus motion is the uniting identity between the billiard ball, A, here, and the different billiard ball, B, there. But there is no such mechanical expedient on the higher stage, *life*. And I know not that it would be well possible for any man to find a better or more striking example in proof than that which we owe to Dr. Erasmus Darwin, some dozen pages on in his *Zoonomia*.

There, referring to vital phenomena in a mechanical regard, we find it said (and it could not possibly be more neatly said), that animal motions "have no mechanical proportion to their cause; the goad of a spur on the skin of a horse shall induce him to move a load of hay!" This, on the part of Erasmus, is a declaration of his belief in the existence of mind, quite as much as in the existence of matter, and, indeed, in the predominance of mind.[1] Many of those "untenable hypotheses" of his look material enough; but still he never deserts his allegiance to mind. Even in plants the chief elements to him are psychical. In fact, if not already animals, they are at least animally endowed. They are possessed, he thinks, even of a brain. They alternately sleep and wake; they secrete, digest, have muscles; they smell, taste, touch; they generate; they distinguish heat, moisture, light; they must repeat their perceptions, waking or dreaming, and so have ideas of the external world and of their own existence!

Charles Darwin at least shares in his grandfather's love for plants; and like him, too, he seems to look upon them as animally endowed. He asks (*Life and Letters*,

[1] Here, properly, of life at least—to *divert* causality; as might have been suggested, indeed, by the difference of a dead or a live finger placed in the fire.

ii. 148) "Heaven to forgive him," but he is disposed to consider "embryological characters" not wanting to plants. "The cotyledons and their position, and the position of the plumule and radicle, and the position and form of the whole embryo in the seed, are embryological." Mr. Huxley, as concerns these theories of the Darwins, carries our regards back to the ancients, "seventy generations" ago. Darwin having "poured new blood into the ancient frame" (*Life and Letters*, ii. 180), he can point with satisfaction to what "the revivified thought of ancient Greece has proved itself to be." This is said, strictly, in relation to that, as Mr. Huxley terms it, "the oldest of all philosophies, that of evolution." We here, at the moment, have only the references of these ancients to botany in regard; but it suits the situation to remind that there are others more ancient than even Democritus (whom it is not unlikely that, as a supposed materialist, and with the chronology named, Mr. Huxley has more specially in his eye)—others quite as relative. Anaximander, for example, is a Darwinian as well of the Erasmian as of the later flight, when he holds that there was an infinite common *materia* of which all things were formed; that the first animals, taking birth spontaneously, were afterwards developed the one from the other; and that it was not otherwise with man, who was at first a fish (Mr. Darwin talks of his "long swimming tail" when he was in this position)! No wonder that Mr. Lewes is decidedly of opinion that, "It is clear that Anaximander originated one of the great lines of speculative inquiry, and that one, perhaps, the most curious in all antiquity." Then Anaximenes, too, will be held to have been "enlightened" in so far as he opined motion to have existed from all eternity. But, probably, it is Anaxagoras who merits most to be named, generally, in this connection. His theories, only

the *Nous* apart, are all physical; then there are his *gemmules* (not really dissimilar from those of Mr. Darwin); and there is also his botany. It is this last that we have more specially in mind at present. We have at least authority in a certain way Aristotelian for this, that Anaxagoras attributed respiration and life to plants; that he held that they were sensitive, that they experienced both joy and grief, and that they were moved by desire; and even that he maintained of them that they possessed thought and knowledge. The same authority adds to the name of Anaxagoras those of Empedocles and Democritus. These and other ancients, Parmenides, Diogenes, seem really to have entertained, in almost all these respects, very much the same opinions; as, that the earth was the mother, and the sun the father, of both plant and animal, nay of Man. Democritus, among them, was no more than the common brother.

In his views, then, however extreme, if in regard to plants only, Erasmus has not only his grandson to support him, but (to say nothing of the modern Fechner and his Nanna) even quite a band of the ancients. All of these ancients, nevertheless, let them be as materialistic as they may on the whole, do still, like Erasmus, discountenance Charles in his denial of design and intellect as independent, actually existent, constituents of this universe. Even Democritus cannot be certainly said not to have united with his materialism the recognition of a spiritual element as well (see Zeller). As for Erasmus, we already know, and may see again, how very much of a theist and teleologist he was.

The second volume of *Zoonomia* being principally professional, it is there, perhaps, that we shall meet the greatest display of that crude physical picture-thinking which has been characterised as common to most

men in a certain early (the profane would say *green*) stage of intellectual advance. Erasmus will account for most physiological and pathological results by a sort of see-saw of demand and supply like the Economists—namely by excess or defect of secretion or absorption—an expedient, or uselessly easy matter of words, that is as old as Anaximenes with his *πύκνωσις* and *μάνωσις*.

Gallstones arise, for example, "from the too hasty absorption of the thinner parts of the bile," while it is from defect of absorption that the liver enlarges. The dull eyes of the aged from the want of moisture are owing to the exhalation being greater than the supply. "The thin discharge from the nostrils in cold weather is owing to the absorbent vessels becoming torpid sooner than the secerning ones which are longer kept warm by the circulating blood." Flowers of zinc and calcined egg-shells, if burned together with a piece of scarlet cloth, cure bronchocele. "The digestion becomes stronger after an emetic by an accumulation of sensorial power during the decreased action of the stomach." "Sneezing consists of muscular action produced by the sensorial power of sensation." "Respiration is immediately caused by the sensorial power of sensation in consequence of the baneful want of vital air." "Swallowing our food is immediately caused by the pleasurable sensation occasioned by its stimulus on the palate and fauces, and is acquired long before the nativity of the animal." "Squinting"—say strabismus!—"is generally owing to one eye being less perfect than the other; on which account the patient endeavours to hide the worst eye in the shadow of the nose!"

Surely it is Quacksalver himself we hear bawl, in the market-place, such mouthings as these—

"The remote cause of thirst arises from the dissipation of the aqueous parts of our fluids by the increased secretion of perspirable matter, or other evacuations!" "Sensitive cough (*Zoonomia*, ii. 181) is an exertion of the muscles used in expiration excited into more violent action by the sensorial power of sensation, in consequence of some things which too powerfully stimulate the lungs. Of this kind is the cough which attends free drinkers after a debauch; it consists of many short efforts to cough, with a frequent expulsion of half a

teaspoonful of frothy mucus, and is attended with considerable thirst—the thirst is occasioned by the previous dissipation of the aqueous part of the blood by sensible or insensible perspiration; which was produced by the increased action of the cutaneous and pulmonary capillaries during the stimulus of the wine—in consequence of this an increased absorption commenced to replace this moisture, and the skin and mouth become dry, and the pulmonary mucus becomes inspissated, which stimulates the bronchia, and is raised into froth by the necessary currents of air in evacuating it—this production of froth is called by some free drinkers 'spitting sixpences'!"

We may pass now to the solemn conclusion of his book. He hopes—Dr. Erasmus Darwin hopes, that he has done something towards an eventual edifice, "which may not moulder, like the structures already erected, into the sand of which they were composed; but which may stand unimpaired, like the Newtonian philosophy, a rock amid the waste of ages!—jamque Opus exegi—

> The work is done!—nor Folly's active rage,
> Nor envy's self, shall blot the golden page;
> Time shall admire, his mellowing touch employ
> And mend the immortal tablets, not destroy!"

CHAPTER VI.

DR. ROBERT WARING DARWIN.

ONE cannot but form a very vivid picture of Mr. Darwin's father, if one will only add to those of the son, the relative words of Miss Meteyard, which occur in her remarkable book, *A Group of Englishmen.* Mr. Francis Darwin is a little too sensitive, perhaps, as to some of the characteristics recorded there of his grandfather. For Miss Meteyard to say, "Like his father (Erasmus), he (Dr. R. W.) was a great feeder," for example, "eating a goose for his dinner, as easily as other men do a partridge"—that, it would seem, he (Mr. Francis) is disposed to deny. Those who were intimate with his grandfather, he assures us, "describe him as eating remarkably little, so that he was *not* a great feeder, eating a goose for his dinner, as easily as other men do a partridge." Otherwise, too, it would appear that Miss Meteyard, in her account of Dr. Darwin, "is not quite accurate." "It is incorrect," for example, "to describe Dr. Darwin as having a philosophical mind; his was a mind especially given to detail, and not to generalising." Again, "in the matter of dress he *was* conservative, and wore to the end of his life knee-breeches and drab gaiters; which, however, *certainly did not,* as Miss Meteyard says, button *above* the knee."

Philosophical is a very loose word in English: I fancy

any exercise of mind whatever, if beyond mere need, may be called by us, like some things of glass, and wood, and metal, "philosophical." Why, then, should not the mind of a man such as Dr. Darwin, who "loved plants," who, according to his illustrious son, formed a theory for almost everything which occurred," who "was the most acute observer" he ever saw, and who was just on the whole "the wisest man he ever knew"—why should not the mind of such a man, "a highly successful physician," have been described as philosophical? Possibly, in the event of such a compliment, in other circumstances, to his grandfather, Mr. Francis Darwin would not always be minded to be equally fastidious. On the buttons Miss Meteyard is, no doubt, wrong. But, with regard to the goose, it may not be unfair to bear in mind the outdoor habits of Dr. Darwin, as well as the fact that he was, practically, a total abstainer, and could never have had his appetite debauched by alcohol in any form or in any quantity. Nay, when we add to these considerations this, that he is represented by his own son, Charles, as "the largest man he ever saw," "about six feet two inches in height, with broad shoulders, and very corpulent," "twenty-four stone in weight, when last weighed, but afterwards much heavier"—may not we, too, be excused in seeing a certain relevance in the imputed feat,—if not as a fact, then as a joke?

It would appear, on the whole, then, that there cannot be much that is serious said, even so far as "the few points" are concerned, against Miss Meteyard's statements. She describes the man externally very much as the son does. "Dr. Erasmus Darwin of Lichfield and Derby," she says, "was cast in a gigantic mould; his son (Dr. R. W.) in a still greater." Burly and farmer-looking, he wore invariably a snuff-coloured cloth suit—coat, waistcoat, and breeches all of a piece. There were lappets to

his waistcoat pockets, and wide cuffs to his sleeves. He had a conspicuous shirt-frill, with a manyfolded necktie of soft lawn equally ample. He bore a ponderous watch-chain; and there were gaiters to his extremities. As he grew in bulk and weight, visiting involved a preliminary problem: he could no longer undertake any and all houses as a matter of course; bare entrance was not always possible for him, the doors were not everywhere wide enough, and he could not always trust himself to the staircase; it was really a chance that the flooring might give way beneath him. In these circumstances the services of a special footman, by way of a spy or scout for preparatory inspection and investigation, became a necessity for him. Such bulk and its trial, by attracting attention, could, as his father, Erasmus, might have said, only prove of advantage to him in his practice. Here, too, like his father before him, he was lucky in his start: he disagreed with the eminent Withering from Birmingham—proved right—and wrote a pamphlet. So, success as a practitioner was his from the outset. Of patients, some were awed by his peremptory commands, others amused by his comic sayings; and all were won by his kindness. An opinion prevailed that he was avaricious of fees; but, if true, he was in many respects a man of untiring and unostentatious benevolence. He was remarkable, too, for his love of children. It pleased him to talk with them in his small, high-pitched, falsetto voice. Miss Meteyard says that he had his father's taste for mechanical inventions: he made a design of his own for a lamp. It is her statement also that he took almost as much interest as his father in botany and zoology; as well as that he, too, made a fine place of his residence, the "Mount."

Born in 1766, he died in 1848, having continued

his practice till within a year of that date, when in a few months he would have been eighty-three. He took his degree before he was nineteen, and, with £20 from his father, and afterwards as much from an uncle, he went into practice at Shrewsbury when he was not yet twenty-one.[1] In his thirtieth year he married, then in her thirty-second, Susannah, the daughter of Josiah Wedgewood of Etruria. She was a sweet, gentle, sympathetic, happy-natured woman, who died after twenty-one years of married life, having brought her husband a dowry of £25,000, to which more was afterwards added on deaths of relatives. It is Charles who tells it us, and we are not unprepared to hear it, that his father was a cautious and good man of business, so that he hardly ever lost money by an investment, and left to his children a very large property. Most men who save, it is not unlikely, are decidedly averse to withdraw a single corn (or coin) from the growing heap till, by death, they have left it, so far as they are concerned, summed: it is an engaging proof of the perfect health and sweetness of the man that, as a father, he (Dr. R. W.) grudged not one single break upon the solid whole, did it but avail to profit his children. His son Erasmus studied medicine without intention to practise; and Charles, who even at sixteen knew a competency behind him, tells such a tale, with respect to Shrewsbury, Edinburgh, Cambridge, the Beagle, settlement in marriage, etc., as proves his father's unstinted liberality to himself in money matters, although "I never imagined," he adds, "that I should be so rich a man as I am." Happy the children who are born into the single animation of such true family concrete!

[1] It is the son (Charles) tells of these two twenty pounds to his father. The grandson (Mr. Francis) calls the statement "incorrect," as £1000 fell to him under his mother's settlement, and he got £400 from an aunt. The question, however, is *when?*

He, this good father, was "clever but heretical," says Miss Meteyard; and then she describes his look, just as though giving shape to the substance and material which we have sketched. "He had," she says, "a powerful, unimpassioned, mild and thoughtful face." Fancy it — powerful, unimpassioned, mild — above the huge, snuff-coloured frame! Was it wonderful in Charles—the full, deep, ever-abiding love he gave this man? "His reverence for him was boundless: he would have wished to judge everything else in the world dispassionately, but anything his father had said was received almost with implicit faith." "As a rule he put small faith in doctors;" but, for instinct, skill, treatment, his belief in his father was "unlimited." It was astonishing how he remembered his father's opinions, and was able to quote some hint of his in most cases of illness. He hated at first his profession, Charles said; with the smallest pittance to live on, or if he had been given any choice, nothing should have induced him to follow it. To the end of his life the thought of an operation sickened him, and he could scarcely endure to see a person bled—a horror which he transmitted to his son. Old Erasmus was made of sterner stuff; he could not get enough of the lancet!

It is characteristic of the son, what he tells of a little rasp between his father and himself. He, Charles, when a boy, was not remarkable for aptitude at school. Perfectly well-conditioned by nature, his interest lay with living things without, and not with dead vocables within. He was immensely fond of shooting, too. So, on these showings, it seems, his father, in a moment of ill-humour, burst out upon him in this way: "You care for nothing but shooting, dogs, and rat-catching, and you will be a disgrace to yourself and all your family!" This, "to my deep mortification," says Charles, "my father once said to

me." "But my father," he adds, "who was the kindest man I ever knew, and whose memory I love with all my heart, must have been angry and somewhat unjust when he used such words." It is intensely characteristic, namely, that these words of his father's gnawed in Charles throughout his whole life. Injustice was a category with him; anything unjust went at once to his heart. To his daughter once, speaking of his father "with the most tender respect," it seems that he could not help unbosoming himself in this reference thus: "I think my father was a little unjust to me when I was young, but afterwards I am thankful to think that I was a prime favourite with him."

Dr. R. W. was not, as we know, a man who wrote; and so, naturally, it is much less directly, than indirectly (through his position and place), that he can be called "workman," or that a share in the "work" can be assigned him. Directly, he really was something of a naturalist: he had grounds, a greenhouse, and garden; and he made much of them. Even as a doctor, his life was an out-door one, and, in a certain way, he was to the manner born. Then it was to medicine that he brought up his young men; and thus the course became noted to them of the subjects that would be natural for them. But it was indirectly in himself, and in his personal influence as father, guardian, and man, that a most real contribution to the "work" must very certainly be allowed him. No less, indeed, lies in the son's mere memory of him. Charles Darwin seems never happier than when he is talking of his father. It is wonderful the things he recollects of him, and thinks worth while writing down for his children. His father's chief mental characteristics, his powers of observation and sympathy, he "had never seen exceeded nor even equalled." He sympathised not only with the distress of others, but in a greater degree with

the pleasures of all around him. "This led him to be always scheming to give pleasure to others, and, though hating extravagance, to perform many generous actions." "He was generally in high spirits, and laughed and joked with every one." "He was easily made very angry, but his kindness was unbounded." Doubtless, it was that extreme kindness and cheerfulness of nature that made him sympathetic, if with distress—pain, then "in a greater degree" with pleasure—joy. He was a great collector of anecdotes, and knew an extraordinary number of curious stories, "which he liked to tell, as he was a great talker,"—generally, indeed, "in conversation with a succession of people during the whole day."

Fancy him, this great, drab-gaitered, snuff-coloured giant, surely Glumdalclitch's father, laughing and shaking in his enormous wheel-chair, the while he pipes out, in his small falsetto, but entrancingly provincial English, those curious anecdotes and stories of his. How he won the confidence of the ladies, and learned all the troubles of husband and wife, even as a father-confessor might! How he knew the particular character of everybody just in a moment at sight! How he could tell people of their undiscovered secrets, till they exclaimed, "Good God, doctor, who told you? we thought no human being knew but ourselves!" It is truly astonishing the flood of pleasing superlatives about his father which Charles Darwin so believingly, so innocently simple, pours out—nominally for his children. What good guesses he could make—how his power of reading even the thoughts of others was something supernatural!

Father and son were evidently on the best of terms, the one listening spell-bound, while the other prattled. Even to general correspondents in after life, Charles is found again and again to quote his father. As, for example, "my father used to believe largely in an old

saying that, if a man grew thinner between fifty and sixty, his chance of long life was poor, and that, on the contrary, it was a very good sign if he grew fatter." Or, "I am in the state which, according to a very wise saying of my father's, is the only fit state for asking advice, viz. with my mind firmly made up, and then, as my father used to say, *good* advice was very comfortable, and it was easy to reject *bad* advice." Or, "my father used to say that it was certain that a boy gave as much trouble as three girls," etc. Such and such years, says Charles, were the most joyful in "my happy life." A happy life, and it was to his father he owed it. The sweet man could only bring him up in sweetness; and sweetness remained ever afterwards the quality of his being. Nay, is it not now an heirloom, a family possession? If (*Life and Letters*) we are allowed to see Charles himself domestically at Down, it is in the midst of his children; and we can only feel in their regard that they are all equally in the bond.

"Our father and mother *would not even wish to know* what we children were doing or thinking — *unless we wished to tell.*"

It is Mrs. Litchfield says this. Are such principles in this world only English? And can we wonder at all that comes of them?

If the son loved thus tenderly the father, not a shade less tenderly the father loved the son. How ill he took it that Charles should leave him and accept that appointment to the *Beagle!* How he found this objection and that objection, and ever again another objection! And how, as his son pleaded with him, and suggested "that he should be deuced clever to spend more than his allowance whilst on board," the great face suddenly broke, humorously, into the somewhat irrelevant smile: "But they tell me you *are* very clever!" How unwillingly, at

long and last, he gave his consent! Then how proud he was of the letters that came from Charles! "There is a natural good-humoured energy in them, just like himself," he brags. How to hear that Captain Fitz-Roy should, with his own hands, have arranged the hammock of his son when sick and suffering at sea, brought tears into his eyes! What a happy man he was when Charles came back and broke in upon them at breakfast—how he must needs cry out to his daughters as he looked at him, "Why, the shape of his head is quite altered!"

He was a good old man; and, no doubt, his "example" not only "ought to have been," as Charles modestly puts it, but actually *was*, "of much moral service to his children." In fact, different as they were, it was really only in order that such a father should have such a son. For the son was a thorough Englishman; and what but a thorough Englishman, with his knee-breeches and drab-gaiters, with his biassed good nature and his outspoken choleric ways, was that burly old country doctor, shrewd, careful, wilful, proud of his well-to-do connections, proud of being himself well-to-do, and proud of enabling his children to show it! "The vessel will be out three years," Charles writes—"I do not object, *so that my father does not!*"

Erasmus, the brother of Charles, otherwise than in his approbation of the great epochal book of the latter, does not concern us here. He was evidently an intelligent and well-read man, most worthy, most thoroughly well-disposed, but peculiar. "My dear one," writes Carlyle, "had a great favour for this honest Darwin always; many a road, to shops and the like, he drove her in his cab ('Darwingium Cabbum,' comparable to Georgium Sidus), in those early days when even the charge of omnibuses was a consideration, and his sparse utterances, sardonic often, were a great amusement to her. 'A

perfect gentleman,' she at once discerned him to be, and of sound worth and kindliness, in the most unaffected form! 'Take me now to Oxenden Street, a dyer's shop there!' Darwin, without a wrinkle or remark, made for Oxenden Street, and drew up at the required door. Amusingly admirable to us both, when she came home." Carlyle further writes, "Erasmus Darwin came to seek us very soon ('had heard of Carlyle in Germany,' etc.), and continues ever since to be a quiet house-friend, honestly attached,—though his visits latterly have been rarer and rarer, health so poor, I so occupied, etc. etc. He had something of original and sarcastically ingenious in him, one of the sincerest, naturally truest, and most modest of men." "Peculiar," then, perhaps, was not on the whole a bad epithet—almost we might be allowed to say harmless, or even innocent. Not but that there was geniality and a joke in him. Charles, *à propos* of his own *South American Geology*, then just about to appear, said to Erasmus, "You will, of course, read it;" and Erasmus replied, "Upon my life, I would sooner even buy it!" Mr. F. Darwin quotes from Carlyle's *Reminiscences* this of his uncle: "Elder brother of Charles Darwin (the famed *Darwin on Species*) of these days, to whom I rather prefer him for intellect." The passage omitted in the middle of the quotation (indicated by the . . .) runs partly thus: "*Omnia ex conchis* (all from oysters) being a dictum of his (the grandfather), as the present Erasmus once told me, many long years before this of *Darwin on Species* came up among us! Wonderful to me as indicating the capricious stupidity of mankind; never could read a page of it, or waste the least thought upon it." Mr. Francis Darwin directly appends here: "Charles Darwin did not appreciate this sketch of his brother." And we do not wonder at it!

CHAPTER VII.

CHARLES DARWIN.

In the first volume of the *Life and Letters of Charles Darwin*, there present themselves almost at once two pieces of writing from which, taken together, it would be impossible not to know, as well the general character of the work of Mr. Darwin, as, more particularly his own. The first is referred to in the title of the book as *An Autobiographical Chapter* — containing "recollections" which, it is said, "were written for his children, and without any thought that they would be published." Mr. Darwin explains himself that such a chapter was the suggestion of one of his critics, and that he had acted upon it because he thought "that the attempt would amuse him, and might possibly interest his children or their children." Mr. Darwin will be found elsewhere, on a letter addressed expressly to his *father*, to scribble a warning: "I find after the first page I have been writing to my *sisters*." So here, from the turn of the phrase at times, Mr. Darwin — not that any inference of misstatement is meant—must, when he is supposed to be writing exclusively to his children, have occasionally been looking as far off as—well, in his own words, "their children." (It is hardly for his children he describes all that about his portfolios, shelves, etc.)

The second piece is entitled, *Reminiscences of my*

father's everyday life, and is the work of Mr. Francis Darwin. The account in it is most minute and interesting. Modest throughout, it is perfectly to be trusted. Mr. Charles Darwin will, of course, go down to posterity as one of the first of naturalists—an observer only to be classed with the Linnæuses and the Cuviers. Mr. Francis Darwin—and, in the circumstances, it is not to disparage him to say so—will not, in all probability, precisely do that; but, with perhaps a more vigorous, or more comprehensive, general intellect, he is otherwise, we make bold to say, just about as good a man as his father was, than whom, for genuine worth, it would not be easy to find a better.

Charles Darwin was born at Shrewsbury in Shropshire on 12th February 1809; and he died at Down in Kent on the 19th of April 1882. He was buried in Westminster Abbey, "a few feet from the grave of Sir Isaac Newton;" his pall-bearers being among the most illustrious in the land.

Mr. Darwin is very minute on himself in his early years, and in these he has no reason to be ashamed of himself—an innocent, susceptible little boy, very much at the bidding and will of his sisters. Than one of these, his younger sister, Catherine—younger than himself, that is—it is understood, it appears, that he was "much slower in learning." She, probably, it was, after consultation with whom, he "concluded that it was not right to kill insects;" and so it was that he made up his mind "to begin collecting only all the insects which he could find dead." So it was also that, with all his "strong taste for angling" (he would "sit for any number of hours watching the float") he "never spitted a living worm." Though "very fond of collecting eggs," too, he "never took more than a single egg out of a bird's nest"—except once! And then he took all; but,

oh, with what an unquiet conscience ever afterwards! With just such a conscience he recollects on one occasion to have beaten a puppy; but it is a very precious consolation to him to think that the puppy did not howl; so that, manifestly, he could not have struck it at all hard! A tricky little urchin, all the same, he must have been at times, and with an amusing little ingenuity of his own. He once told another little boy that he could produce variously coloured polyanthuses and primroses by watering them with certain coloured fluids—which was, of course, he interjects, "a monstrous fable, and had never been tried by me." Another time, he hid in the shrubbery a lot of fruit he had taken from the trees, and then ran in breathless haste to spread the news that he had discovered a hoard of stolen fruit. "I believe," moans Mr. Darwin, "that I was in many ways a naughty boy!"

We see already — in the mention of insects, eggs, flowers—signs here, even in childhood, of deep-seated enthusiasm for natural history. By the time he was eight years old, he tried to make out the names of plants, and collected all sorts of things, shells, seals, franks, coins, and minerals. "The passion for collecting was very strong in me," he says, "and was clearly innate, as none of my sisters or brother had this taste." "I must have observed insects with some little care," he remarks; "for, when ten years old I went for three weeks to the sea-coast in Wales, I was very much interested and surprised at seeing a large black and scarlet Hemipterous insect, many moths (Zygæna) and a Cicindela, which are not found in Shropshire." *Das heisst observiren!* That is what it is to observe—and at the age of ten! Still, in regard to minerals at that age, though he continued collecting them with much zeal, he says, it was "quite unscientifically — all that I cared about was a new-*named* mineral, and I hardly attempted to classify

them." The italicised "*named*" is Mr. Darwin's own; and it brings with it its secret, perhaps. It may remind, namely, that some of those who are not the best calculated even for the learning of languages, are apt to be caught with the big technological names of the commonest things. What, in English, makes most of us *creep*, can only fill them with rapture in Latin. The Cockroach is an ugly *varmint;* but how grand he is as the *Blatta orientalis!* Betty, in the kitchen, holds up her skirts, of an evening, with an even infinite horror of the black beetles on the floor; but ought she not to let them down again when she is assured that each is only that grand thing—a *Blaps mortisaga?*. So it is, perhaps, that the boy was delighted to be at home with such abominations to others as were to him Zygæna, or Hemiptera, or a Cicindela. There is certainly a charm in being able to give learned terms to a thousand of the commonest objects for which we commonly have no name. Even for the sake of the naming, then, may we suppose it to be the case that — at least sometimes—collectors are collectors?[1]

It would seem, however, that it could not have been for the names only that the boy—as Mr. Darwin, in

[1] I should be sorry if it were misunderstood from the above that I in any way desired to represent researches into even the very lowest forms of life as ἄτιμα—without right of citizenship, as it were. On the contrary, I am assured of the important lessons—of the humanising influences—which they bring with them, especially for the young. In good truth, there is nothing in nature which is beneath mind; for mind is the source, and the seat, and the goal of nature; the νοῦς of Anaxagoras is still in a way the secret of the universe. "If, in regard to the study of the other animals, any one opine such study to be beneath his attention, he ought to think the same for himself; since it is not possible to see without aversion what human beings consist of, as blood, flesh, bones, veins, and the like." So says Aristotle, 645*a*.

further exemplification of the taste for natural history, proceeds to relate—"took much pleasure in watching the habits of birds, and even made notes on the subject;" but when he adds this, "In my simplicity I remember wondering why every gentleman did not become an *ornithologist*,"—we are once more remitted, it may be, to the charm of terminology, but not alone.

The simplicity which we see (with whatever ingenuity) to predominate in the little collector, continued to be the characteristic of the later schoolboy. "I must have been a very simple little fellow when I first went to school," says Mr. Darwin; and then he tells us how his "false friend Garnett" tricked him about the hat and the cakes. He could hardly have been less simple at seventeen, when at every bird he shot, his other two false friends cried out, "You must not count that one, I fired at the same time!"

For his chemistry with his brother he was nicknamed Gas—the headmaster publicly rebuked him for wasting his time on such useless subjects! "He called me," says Mr. Darwin, "very unjustly, a *poco curante*, and as I did not understand what he meant, it seemed to me a fearful reproach." Evidently *Candide* had not been one of the books he read; and, as usual, the category "*unjustly*" went to his heart.

At this school of Dr. Butler's, where he remained for seven years till 1825, Darwin's success was small. "The school as a means of education to me," he says, "as it was strictly classical, nothing else being taught, except a little ancient geography and history, was simply a blank." And then he adds, "During my whole life I have been singularly incapable of mastering any language." He could learn by heart, he says, with "great facility, forty or fifty lines" of verse of a morning; but every one of them was "forgotten in forty-eight

hours!" He believes that he was considered by all his masters and by his father as a very ordinary boy, rather below the common standard in intellect. But even so, his conscientiousness came to the front. "I was not idle," he interjects, "but worked conscientiously at my classics, not using cribs." Darwin asserts also for himself at this time, "strong and diversified tastes, much zeal for whatever interested me, and a keen pleasure in understanding any complex subject or thing." He "used to sit for hours reading the historical plays of Shakespeare," or "Thomson's *Seasons*," or "the recently published poems of Byron and Scott." "I mention this," he says, "because later in life I wholly lost, to my great regret, all pleasure from poetry of any kind, including Shakespeare." The conclusion here is: "As I was doing no good at school, my father wisely took me away at a rather earlier age than usual, and sent me (Oct. 1825) to Edinburgh University with my brother, where I stayed for two years."

Here, as is easy to be understood, being at medical classes, he at once took to natural history. In this he had the aid of Newhaven fishermen, the countenance of some like-minded students, and the encouragement of some learned societies, to which, though still so young, he even read papers, not without some original observations in them. It is now he mentions having read, as we have seen (p. 5), his grandfather's *Zoonomia*, "admiring it greatly, but without its producing any effect" on him—this *à propos* of one of his new friends "bursting forth in high admiration of Lamarck." "I listened in silent astonishment," says Mr. Darwin, "and as far as I can judge without any effect on my mind." In the course of the *Life and Letters*, we have a good deal to hear of Lamarck, but always almost with rejection and contempt on the part of Mr. Darwin. Here, too, it is that Mr.

Darwin describes himself as eventually, with regard to *Zoonomia*, "much disappointed, the proportion of speculation being so large to the facts given."

Now, with the exception of what relates to his principle of, or for, modification, it is assumed to be established that there is nothing in Charles Darwin which was not already suggested by his grandfather Erasmus. The declaration of the former (Charles) here, then, whether as regards Erasmus or as regards Lamarck, amounts to a denial on his part of any influence from either. Mr. Darwin, never elsewhere otherwise as regards Lamarck, and however otherwise elsewhere (in the Krause-book), as regards his grandfather, is as usual *like himself* when he finds he has made an assertion that is possibly too sweeping. Apprehension comes to that tender conscience of his with that idea here, and he cannot help the postscript: "Nevertheless it is probable that the hearing rather early in life such views maintained and praised may have favoured my upholding them under a different form in my *Origin of Species*." The claim here, "a different form" (which points to no more than the exception already made), can mean nothing additional to the claim for his father which we have already seen on the part of Mr. Francis Darwin (the passage quoted at p. 44 from the *Life and Letters*, vol. ii. p. 189).

In the hospital at Edinburgh, he avows, "some of the cases (two operations among them) distressed me a good deal, and I have still vivid pictures before me of some of them; but I was not so foolish as to allow this to lessen my attendance." Such facts as these throw emphasis on his words, that his disposition was very affectionate, and that he had many friends whom he loved dearly. In them, too, we see the eminently good young man who might have been the hero of the mutual

improvement society quite as much as Dr. Thomas Brown himself. Attending the meetings of the various societies had a good effect on him, he owns, in stimulating his zeal and giving him "new congenial acquaintances" —several young men, namely, "fond of natural science." As he did learn at school conscientiously the irksome classics without a crib, so here in Edinburgh he was not so foolish as to allow mere feeling to interfere with his regular attendance at the hospital. His summer vacations at this time, he says, were given up to amusements, "though," he adds, and the addition is very much in the same "good" direction, "I always had some book in hand." Here again we have the excellent, well-conducted lad who knew Thomson's *Seasons* and the recent poems of Byron and Scott, and who sat for hours reading the historical plays of Shakespeare. One gets struck with the patience and tenacity here—patience and tenacity despite of an entire want of congeniality and taste. For one can see, like the masters, and like the father, so far—not an ordinary boy, not by any means an ordinary boy in the reality of his life—but still an ordinary boy, and a boy, "rather below the common standard in intellect," if that standard were alone to be referred to one's place and appearance in class. It is precisely this same good young man who will always have an improving book in hand (Milton in his pocket when he went ashore on the voyage even), and creditable acquaintances around him, of whom, at Maer in 1827, Sir J. Mackintosh opines, "There is something in that young man that interests me;" for, says Mr. Darwin, "this must have been chiefly due to his perceiving that I listened with much interest to everything which he said!" And, surely, we have a right, as concerns this "much interest," to put it in collation with the propriety and perseverance of the

good young man, seeing that as Mr. Darwin adds, referring to it (the interest), "for I was as ignorant as a pig about his subjects of history, politics, and moral philosophy." "Praise from an eminent person"—this is the moral of Mr. Darwin himself here—"is, I think, good for a young man, as it helps to keep him in the right course."

Charles Darwin, after Edinburgh, did not proceed to Cambridge at the usual time in October, but after the Christmas vacation, early in 1828. He found that, in the two intervening years after leaving school, he "had actually forgotten almost everything which he had learnt, even to some few of the Greek letters;" hence the necessity of a certain delay while he worked under a private tutor at Shrewsbury. Why he went now to Cambridge was that it had been decided that he should become a clergyman, and that it was necessary, accordingly, that he should go to one of the English universities and take a degree.

As regards religion, we can pretty well understand how we are to look upon it in his case so far. His father, like his grandfather, was, as we have seen, lax; his mother and her relations were Unitarians; while he himself, though beginning his education under a Unitarian minister, belonged with his brother, "nominally," to the Church of England. In such circumstances, a profession must have appeared on the whole simply a profession; and there could not, naturally, have been much difficulty or demur in the mind of the young man as regards the Church in the first instance. "As he did not then doubt the strict and literal truth of every word in the Bible, he soon persuaded himself, after reading a few books on divinity, that our Creed must be fully accepted." This, like that of many others, was but a lukewarm beginning, and it never grew warmer. The temperature

of his faith certainly remained, honestly enough, for a few years now, at the conventional height. He did not shrink, doubtless, from any university shibboleth. To W. D. Fox, on the occasion of the death of a relative, he writes in his letter of condolence, 23rd April 1829, that he is assured it will be known where support is to be looked for; "and after so pure and holy a comfort as the Bible affords, he is equally assured how useless the sympathy of all friends must appear." And, whilst on board the *Beagle*, he tell us himself: "I was quite orthodox, and I remember being heartily laughed at by several of the officers (though themselves orthodox) for quoting the Bible as an unanswerable authority" (i. 307). Let me point, in passing, to that parenthesis as signally Darwinian: it is not for him, by any inadvertence, to leave a possible slur gratuitously on any man! But, in the end (at least as late as 1873), we find it formally said (iii. 179): "I gave up common religious belief almost independently from my own reflections." Nor, looking to the world as it is, do I apprehend that there need be any special outcry so far. It is highly probable that with a very very great many nowadays convention is the rule, and a man ranks religiously rather by the side he takes, than by any overt profession of dogmas which formulate faith.

"During the three years which I spent at Cambridge," Mr. Darwin declares, "my time was wasted, as far as the academical studies were concerned, as completely as at Edinburgh or at school." When we look closely at this, we see that what is meant as unsatisfactory concerns alone instruction through books. These apart, there has been quite a busy intellectual life, whether at school or in Edinburgh. And yet we hear of books, too,—Shakespeare, Thomson, Byron, Scott,—and the reading of them!

"My musical friends," says Mr. Darwin, "sometimes

amused themselves by making me pass an examination, which consisted of ascertaining how many tunes I could recognise, when they were played rather more quickly or slowly than usual; God save the King, when thus played, was a sore puzzle." Nevertheless, "from associating with those men and hearing them play, I acquired a strong taste for music." *He* acquired this strong taste for music—*he*, who "was so utterly destitute of an ear" that he "could not perceive a discord, or keep time and hum a tune correctly"—*he*, to whom it was "a mystery how he could possibly have derived pleasure from music!"

Whitley, he says again, "inoculated me with a taste for pictures and good engravings, of which I bought some: this taste, though not natural to me, lasted for several years."

As little, then, as it was "natural" for him to take to pictures or music, just so little was it natural for him to take to the reading of books—even though he did so for hours! Why he did so, the reason of it, was simply this: He was the exemplarily good young man that, as he was taught or impressed, held self-improvement to be the one great duty. It was right to know pictures—it was right to know music—it was right to know literature. It was such knowledge alone that, as it were, got good marks, and was the badge of what was reputable. Music, painting, poetry, each, if to be known, required effort certainly—force upon oneself; but tenacity might realise every one of them. One's place ordered as much. He was his celebrated grandfather's grandson,—*noblesse oblige*,—and he would persevere. All this very much without actual consciousness. As for beetles, again, that was different: it was "*natural*" to take to them.

"No pursuit at Cambridge was followed with nearly so much eagerness, or gave me so much pleasure, as collecting beetles. It was the mere passion for collecting, for I did not dissect them, and rarely

compared their external characters with published descriptions, but got them named anyhow.—What an indelible impression many of them have left on my mind ! I can remember the exact appearance of certain posts, old trees, and banks where I made a good capture. —I am reminded of my old days by my third boy having just begun collecting beetles, and he caught the other day *Brachinus crepitans*— my blood boiled with old ardour when he caught a *Licinus*, a prize unknown to me—I feel like an old war-horse at the sound of the trumpet when I read about the capturing of rare beetles,—it makes me long to begin collecting again. (*Life*, etc., i. 50 ; ii. 36, 140, 141 ; iii. 335.)

His friend Herbert cannot go to Barmouth, but he must be written to urgently to search for, find, and send on quite a host of beetles : the violet-black, the large smooth black, the long smooth jet-black, the small pinkish, the yellowish transparent, the bluish metallic-coloured dung-beetle, etc. etc. Even on the voyage, to the Naturalist of the *Beagle*, beetles were of absorbing interest. At Bahia, as the *Journal* tells us, he had amused himself with observing the springing powers of the Pyrophorus luminosus ; and from Rio he writes rapturously to Henslow of Hydroporus, Hygrotus, Hydrobius, Pselophus, Staphylinus, Curculio, as to Fox of Noterus, Colymbetes, Hydrophilus, Gromius, but asking the latter, almost pathetically, " Do you think any such will ever give me so much pleasure as our old friend *crux major ?* And so it continues all through the voyage. At sea, in Patagonia, on the Andes, Keeling Island, Tierra del Fuego, the Galapagos, St. Helena, it is always beetles that are largely his interest. *A propos* of this last island, a long and peculiar footnote occurs in the *Journal* (p. 490), and is good to read. The stercovora are " beetles which find support in the matter which has already contributed towards the life of other and larger animals ; " and Mr. Darwin is much exercised in mind on a problem suggested by the differences of them as in Europe, St.

Helena, La Plata, and Van Diemen's Land. If aborigines, it is "a difficult point to ascertain on what food they formerly subsisted" in St. Helena, where there had been no quadrupeds till only very recently. And he had been struck, it seems, with a similar difficulty in Van Diemen's Land. In Europe these beetles are "confined in their appetites," each of them keeping to its own quadruped and repugning the rest. Must it be supposed that the Van Diemen's Land beetles, losing the kangaroo, had taken to the cow, although it "had been then introduced only thirty-three years"? Mr. Darwin finds this apparent change of habits "highly remarkable;" and he plainly thinks it a pity that there should be so few insects of the sort, and that, consequently, such a quantity of good food should be "lost" in La Plata, "where, from the vast number of cattle and horses, the fine plains of turf are richly manured." So "I imagined," says Mr. Darwin, "I saw in this an instance where man had disturbed that chain, by which so many animals are linked together." The special stercovora of which he speaks are named Aphodius, Orgetes, Phanæus, etc., and the note is concluded by the acknowledgment, "I am indebted to the Rev. F. W. Hope, who, I hope, will permit me to call him my master in Entomology, for giving me the names of the foregoing insects."

It occurs to one here that it is remarkable how everything seems to have remained unchanged with a mere dung-beetle during all these twenty-two hundred years that separate Aristotle from Darwin. The latter tells here of a Phanæus that "buries the dung of the cattle in large earthen balls beneath the ground;" and the former speaks of a Cantharus that rolls up the dung in which it buries itself during the winter. In both, doubtless, it is the same insect that bears elsewhere, from the habit in question, the name of Pilularius.

Even many years after his voyage, as when he speaks of his son, Mr. Darwin is seen to be as enthusiastic in regard to beetles as ever he was; and two years later than that he cannot help writing to his friend Hooker, when he hears that the latter is going to Palestine: "If you go to the top of Lebanon, you ought to collect any beetles under stones there." Later still, in 1869 (iii. 114), he envies Mr. Wallace his capture of butterflies, and exclaims to him, "Certainly collecting is the best sport in the world."

I think we shall now, then, be pretty well at home with Mr. Darwin's pursuit of beetles, and how it must have distracted his studies otherwise at Cambridge. He might force himself to gulp music, painting, and poetry; but beetles ran in his blood. And so, all things considered, it is further quite evident that the peculiar staple of Cambridge University could not have proved very inviting to him. He was unable to see "any meaning in the early steps in Algebra;" and, as a whole, mathematics just "repugned" him. With respect to Classics, he did nothing except attend a few compulsory college-lectures. His tenacity, diligence, and intelligence being roused, however, served him in good stead when he had to get up work to pass his various examinations, the *Little-go*, for example, "which he did easily." For his B.A. degree, his preparation, he says himself, "was done in a thorough manner, and so by answering well the examination questions in Paley, by doing Euclid well, and by not failing miserably in Classics, I gained a good place among *οἱ πολλοί* or crowd of men who do not go in for honours."

That, then, is the record of his studies, indoor or outdoor, at Cambridge. He seems, for some time at first,—riding, shooting, hunting, driving, drinking, card-playing,—to have got into "a sporting set, including some

dissipated low-minded young men." But he, evidently, very soon forsook it. His son, Mr. Francis Darwin, tells us, "I remember, in my innocence as a small boy, asking him if he had ever been tipsy; and he answered very gravely that he was ashamed to say he had once drunk too much at Cambridge:" may we not make bold to regard that one occasion as the occasion also of his rupture with "the sporting set"?

That brief excitement over, Charles Darwin approved himself at Cambridge, as the steady, well-regulated young man he had always been everywhere else. As at Edinburgh, so here, he associated only with such respectable young men as every respectable young man always should associate with. His daily companions, besides Fox, the enthusiastic entomologist, were, as they were eventually designated, H. Thompson, M.P., Railway Chairman, leading agriculturist; Albert Way, "the well-known archæologist;" Whitley, Canon of Durham; Herbert, County Court Judge at Cardiff; Heaviside, Canon of Norwich; Cameron, Vicar of Shoreham; Blane, who held a high post during the Crimean War; Lowe, brother of Lord Sherbrooke; Watkins, Archdeacon of York; Dawes, Dean of Hereford; Eyton of Eyton; Ramsay, brother of Sir Alexander Ramsay; Wood, nephew of Lord Londonderry, etc. etc.

To have such friends as these was, for any well-conducted young man, much; but it was a good deal more to be the favourite attendant of the most eminent professors. Professor Henslow, father-in-law of Sir Joseph Hooker, was much won upon by the young man, and took to him with the most open consideration,—"a circumstance which," says Darwin, "influenced my whole career more than any other." It led by and by, namely, to his appointment to the *Beagle;* but was quite as influential, perhaps, in a general scientific way otherwise.

Henslow lectured on botany, and Darwin, though "not a student of botany," attended both his lectures and his field excursions. Presently, then, he got an invitation to Henslow's weekly evenings. So, "before long," says Mr. Darwin, "I became well acquainted with Henslow, and, during the latter half of my time at Cambridge, took long walks with him on most days; so that I was called by some of the Dons 'the man who walks with Henslow;' and in the evening I was very often asked to join his family dinner." Intimacy with such a man was to Darwin, as he says himself, "an inestimable benefit." Another friendship of moment for Darwin was that of Henslow's brother-in-law, the naturalist Leonard Jenyns. Through Henslow, Darwin came to know also the somewhat formidable Dr. Whewell, and "on several occasions walked home with him at night!"

There are those who would look invidiously on such an intimate relation as this between a young man and his superior; and who, if enemies, might even flout him with a *soupçon* of fawn. But Charles Darwin never had an enemy; and we shall presently see how he could face, on ship-board, the British captain that was over him, when what was concerned (slavery) was a truth and a principle that lay at his heart.

But it was with Sedgewick that this professional relation was of the greatest benefit to the ardent young man, eager in the greed of his own. Sedgewick actually took Darwin with him to share in, and be a witness of, all that might be geologically done or said on a tour in North Wales. It was so he learned his geology *practically*, not through books, but in actual fact. This tour, he admits, taught him "how to make out the geology of a country." What they missed—even that came afterwards to be as instructive a lesson as anything they found. "The plainly scored rocks, the perched boulders,

the lateral and terminal moraines of Cwm Idwal, are so conspicuous, that a house burned down by fire did not tell its story more plainly." And yet—"neither of us saw a trace of them!"

Darwin took his degree in January 1831. Henslow writes about the *Beagle* in August 1831.

CHAPTER VIII.

CHARLES DARWIN—CONTINUED.

"THE voyage of the *Beagle* has been by far the most important event in my life, and has determined my whole career.—I owe to the voyage the first real training or education of my mind; I was led to attend closely to several branches of natural history, and thus my powers of observation were improved, though they were always fairly developed. The investigation of the geology of all the places visited was still more important." In the naming of the essential and indispensable consequence of the voyage of the *Beagle* for the formation of the naturalist and geologist which Charles Darwin alone was, no other words need be added to these of his own.

It was Mr. Darwin's uncle, Josiah Wedgewood, who brought about the required crisis. The loving father would not part with the son, and the loving son, who, not to vex his father, had, though sorely against the grain, declined the appointment, was here—at Maer (September 1)—to shoot! The silent reserved man that Josiah was, bundled his nephew into his gig, and bowled him over the thirty miles at once to Shrewsbury to make his brother-in-law see reason. And his brother-in-law did straightway see reason when driven home by "the most sensible man in the world," as was to him the somewhat "awful man" who would not swerve an inch from the right course for

any power on earth. There had been a check, too, at first, on the part of the captain of the ship; Darwin's nose lacked energy, he thought; and he threw for a time cold water on his going. It is remarkable that on such small circumstances as his uncle's drive and the shape of his nose depended that whole voyage of the *Beagle* and all that came of it for Darwin—in a word, his life and work. Mr. Darwin himself says this; and of course there is truth in it, though it may not be quite right to credit circumstances so that if Alexander the Great had not bathed in the river Cydnus, there would not have been any voyage of the *Beagle* at all. A man may go round to his house by the street on the east, *or* by the street on the west: almost absolutely, it will not make the difference of sixpence in his bank-book by the end of the year!

"What a glorious day the 4th of November will be to me! My second life will then commence, and it shall be as a birthday for the rest of my life." In this sanguine way writes Charles Darwin in October; but it was the 27th December before the *Beagle* was allowed by circumstances finally to set sail. From Tuesday, this 27th December 1831, till the evening of Sunday, the 2nd October 1836, Charles Darwin was a wanderer round the world. He reached his home at Shrewsbury on the morning of Tuesday the 4th at breakfast time, when his delighted father, the good old doctor, in his lively falsetto gave the cry, "Why, the shape of his head is quite altered!" In five years, and such five years, change enough there must have been. The callow youth, with his fresh cheek, and his ready assent, was now a man. Reflection gave the vigour of line to the face; and his keen observing eyes were deep within their, now much more gravely, overhanging brows. The expression of the head, consequently, its movable contour, might be

changed, but not possibly—at least not possibly *much* between the ages of twenty-three and twenty-eight—the bony case itself.

Changes there were, great changes, changes bodily, changes mental. Of the bodily frame, namely, there was that most sad and serious change—the change of health. "For nearly forty years Charles Darwin never knew one day of the health of ordinary men." It seems pretty certain that this was a consequence of the voyage. While on the *Beagle* he had suffered almost constantly from sea-sickness; and a peculiar illness which he had in South America may have added its quota to the bad effects of the sickness. Darwin himself, later in life, seemed rather to think of "hereditary fault;" but we hear of no such fault either in father or in mother. That father and grandfather might have suffered at times from a "sense of fatigue," was not possibly a consequence of hereditary fault, surely; if for nothing but their enormous bulk; while the sea-sickness was a certain fact. His shipmates write strongly of it; and his own letters, even the latest, are explicit in complaint. His very *Journal*, as printed, almost concludes thus: "If a person suffer much from sea-sickness, let him weigh it heavily in the balance. I speak from experience: it is no trifling evil, cured in a week."

But let there be doubt in any way of the cause, there can be no doubt of the fact of the illness. After his return, again to say it, for the rest of his life, Charles Darwin never knew a day of ordinary health. The slightest thing excited him; and the slightest excitement threw him as into collapse, with shivering, vomiting, and agonising headache for forty-eight hours. They who know can tell us that there are those, not otherwise infirm, who suffer periodically thus. Emerson was one of them—perhaps Hegel—perhaps Plato. Darwin was

tall and thin; and so perhaps his spine the weak point. The sea-sickness may have acted either on its ganglia or itself; and it is consistent with this that it was from the water-cure alone, the cold *douche*, that he received any benefit.

The voyage otherwise was an infinite gain to Darwin. Thus, as we have seen, it was an infinite gain to him in account with science; but it was no less an infinite gain to him in account with manhood. For science, during the voyage, or as a savant, Charles Darwin trained himself; but as a man he grew in the new life. Hitherto, on the whole, his education in humanity had been, boldly to say so, provincial and scholastic. Certain usual social experiences were, of course, necessary and inevitable. He could shoot, too; and even jump a bar as high as his Adam's apple. Then there were the profaner eventualities of the sporting set. But both experiences and eventualities proved insufficient to relax the stiffening of propriety in his father's son, or his grandfather's grandson. A certain provincial precision was, it may be, even present to impress him on the part of his relatives at Maer.

Then, after that, there were the Professors—gentlemen certainly, but not exactly men of the world.

It was from all this, and impressed, moreover, with the idea that he was only an apprentice, as substitute and stopgap to gather materials for the journeymen, his superiors, that Charles Darwin stepped on to the deck of the *Beagle*. Tall, thin, young—not yet twenty-three, awkward in movement, a mere unfledged student, stiff, formal, uncertain, but very willing, he was not a happy man at first —under the eyes of his shipmates. Much as he found them, they probably found him. As they were strange to him, and he felt awkward with them; he, doubtless, was strange to them, and they felt awkward with him. So striking, telling—disconcerting, perhaps—was the new

experience to him, that he cannot help, in his need of support and sympathy, communicating it to his friend Henslow. "The officers," he writes to him, "are like the freshest freshmen—that is, in their manners, in everything else widely different." Very widely different,—at first impracticable, indeed,—must have appeared these free-spoken young men of the world to the unaccustomed student, ill at ease in himself. The ready new speech of that familiar new intercourse — the chaff—must have seemed at first an unintelligible *argot* to him, and rude, disagreeably rude, painfully rude, uncomfortably rude. The first lieutenant, Wickman, gives voice to how the "fly-catcher" appears to them. "If I were skipper," he never for a moment hesitates to assure the young man, "I would soon have you and all your d——d mess out of the place—your d——d beastly devilment!" How the two sides must have stared at each other! Mr. Francis Osbaldistone in *Rob Roy* overheard Dickon the horse-jockey whisper to Wilfred the fool—"Look thou, an our French cousin be nat off a' first burst." To which Wilfred answered, "Like enow, for he has a queer outlandish binding on's castor." The midshipmites may, on such a rule, have wickedly enjoyed the first sea-sickness of the fly-catcher; but he dined in the captain's cabin, and they were obliged to call him "Sir"—a formality, however, that soon yielded to love, as the wickedness of glee to sympathetic respect. There was no "bumptiousness" in the landsman. On the contrary, there was always the ready smile, the concessive blush, the willing word. He was always at his duty as well. No matter how sick they saw he was, to that duty he enduringly stood. He knew all about shooting also, and he could himself shoot—there was, for them, good service to him in that all through. He was "a rare plucked one," too; he shot a condor; he stole up behind a fox

and killed him with his geological hammer; he interposed between a huge penguin and the sea, and fought him sturdily. ("It was a brave bird; and till reaching the sea, it regularly fought and drove me backwards; nothing less than heavy blows would have stopped him; every inch he gained he firmly kept, standing close before me erect and determined," etc.) "He and one other man were alone able to fetch water for a large party of officers and sailors utterly prostrated." He was often absent, when the ship was in port, on long excursions on horseback, which, in South America especially, were always adventurous, requiring endurance of much privation, and attended by constant dangers from Gauchos and Indians, as well as from armies and squads of revolutionary soldiers not a bit better than bandits. Then his knowledge and the curious things he could relate to them, his shipmates. Not a bird passed, not a fish leapt, not an insect alighted, but he knew it and named it, and could tell all about it. Sailors, midshipmen, gun-room officers, captain—all saw him, admired him, respected him, loved him. The gun-room officers stood bravely forward for him, and invited him to their mess, even then when the captain himself in a moment of temper pouted at him. And there and then, too, Charles Darwin was himself!

Captain Fitz-Roy was not always a pleasant man to deal with. We have a note of this in the first letter of Charles to his father from the sea (i. 232): "Hitherto the voyage has answered *admirably* to me, and yet I am now more fully aware of your wisdom in throwing cold water on the whole scheme—I should be very cautious in encouraging another," etc. "We had several quarrels," says Mr. Darwin himself; and then he relates how Captain Fitz-Roy — "and captains of men-of-war are the greatest men going, far greater than kings or schoolmasters"—took umbrage at him for something he had

answered about slaves, angrily remarking, as Mr. Darwin has it, "that, as I doubted his word, we could not live any longer together!" "I thought," adds Mr. Darwin on this, "I should have been compelled to leave the ship; but as soon as the news spread, which it did quickly, I was deeply gratified by receiving an invitation from all the gun-room officers to mess with them." The doubting of Fitz-Roy's word simply lay in Darwin's asking him, when he (Fitz-Roy) told him (Darwin) how a slaveholder had asked his slaves whether they were happy and whether they wished to be free—"if he thought that the answer of slaves in the presence of their master was worth anything?" One does not wonder here that even the captain of a man-of-war, on coming to see his own childishness, presently sent and apologised. The sweet-tempered, courteous, concessive Charles Darwin kept always on the best of terms with Fitz-Roy; still it is evident that, in his intrepidity of principle, the young naturalist must have had many tussles in regard to politics with his equally young commander. The former writes Henslow once from Rio: "The captain does everything in his power to assist me and we get on very well, but I thank my better fortune he has not made me a renegade to Whig principles. I would not be a Tory, if it was merely on account of their cold hearts about that scandal to Christian nations—slavery" (i. 237). To another friend, C. Whitley, he writes, fully two years later, from Valparaiso: "If your opinions are the same as formerly, you would agree most admirably with Captain Fitz-Roy—the object of his most devout abhorrence is one of the d——d scientific Whigs. I have often said to him, I once had a very good friend, an out-and-out Tory, and we managed to get on very well together. But he is very much inclined to doubt if ever I really was so much honoured!" The morning after his arrival at home on the termination

of the voyage, he writes a simply friendly letter to his captain; but even in it, while sympathising with him on the shabby treatment which he (Fitz-Roy) received from Government, he cannot help adding, "but I am no renegade"—he means to those (the Government) whom he still calls the "honest Whigs"—"and by the time we meet my politics will be as firmly fixed and as wisely founded as ever they were." It is eminently characteristic of Charles Darwin that he has no sooner said this than he feels it to be too much of a cut, and must immediately turn the edge of it by interjecting, "I thought when I began this letter I would convince you what a steady and sober frame of mind I was in; but I find I am writing most precious nonsense" — with further propitiatory words to the same effect. The evidence is clear, then, of the alleged somewhat strained relations of the two men politically. Nor, perhaps, on the whole, is the character of the one, very much less than that of the other, to be considered *pour quelque chose* in the resultant heat between them.

"Fitz-Roy's character was a singular one," says Mr. Darwin, "with very many noble features — in several respects one of the most noble which I have ever known: he was devoted to his duty, generous to a fault, bold, determined, and indomitably energetic, and an ardent friend to all under his sway. He would undertake any sort of trouble to assist those whom he thought deserved assistance. He was a handsome man, strikingly like a gentleman, with highly courteous manners; he must have inherited much in his appearance from Charles II. His temper was a most unfortunate one. It was usually worst in the early morning, and with his eagle eye he could generally detect something amiss about the ship, and was then unsparing in his blame. He was very kind to me, but was a man very difficult to live with on the intimate terms which necessarily followed from our messing by ourselves in the same cabin. We had several quarrels; for instance" — and then follows the story of their warm little altercation in regard to the slaves.

Perhaps it was hardly fair to misprize (it happened a few pages back) Mr. Darwin's knowledge of character; for no one can possibly read the above without agreeing that Charles Darwin not only *could*, in that regard, *see*, but *name*. We have no difficulty to "agnize" all that has been described—the bold young man and gentleman that is nephew of the Duke of Grafton, and a descendant of that king, the gracious, graceful, graceless Charles II. He is captain of a man-of-war, and yet only twenty-three years old, while his naturalist is but twenty-two; that is, both, so far as age goes, boys: neither likely, then, to avoid the other's angles from the consideration and composure that are born of experience. Before sailing, Captain Fitz-Roy was to Charles Darwin "everything that is delightful," his "*beau ideal* of a captain;" "you cannot imagine anything more pleasant, kind, and open;" "if I was to praise him half so much as I feel inclined, you would say it was absurd;" "there is something most extremely attractive in his manners and way of coming straight to the point;" "he asked me at once, 'Shall you bear being told that I want the cabin to myself—when I want to be alone? if we treat each other this way, I hope we shall suit; if not, probably we should wish each other at the devil.'" After sailing, however, it is not long before the picture becomes as we have above seen it. By and by he writes, "The captain keeps all smooth by rowing every one in turn." It is very remarkable the perfectly respectful and friendly, but unhesitatingly firm front which the concessive Charles Darwin, who would not hurt the feelings of a fly, keeps to the impetuous young commander who knows not a check or a curb to the instant expression of his will. He had said it—the slaves spoke true—you doubt my word—we part—we cannot any longer live together! Self-willed, just as a matter of course — the instant,

straight-a-head autocrat that took on at once, with a kind of young, high-spirited zest, his own peremptory authority, and then again, with sharpened zeal, rose fresh every morning to its exercise! his very kindness belonged to the character of such a bashaw. He was the descendant of kings. He knew himself a gentleman by blood and by birth, and in his very being. He was high-placed by divine right: he could not but be generous, he would see that those others—who belonged to him, who, in a certain way, were his—had justice done them. The keen-faced, keen-eyed, quick young man who, the moment his authoritative foot was on the deck, saw! —saw and shouted!—without a moment's misgiving, without a thought, or a stop, or a pause, shouted! What was he there for? he must be hard and exacting. In his own importance of place, he would act up to it. But he was most noble, high, true, chivalrous. He was filled with his duty. If he was absolute in command, he had been as absolute in his obedience. He was transparently sincere. And Charles Darwin, after all, was just the fellow to this man; for, if gentle—gentlest of the gentle, he was strong too—strongest of the strong. As he said himself of Henslow, "A man must have been blind not to have perceived that beneath his placid exterior there was a vigorous and determined will: when principle came into play, no power on earth could have turned him one hair's-breadth." It was this principle of the quiet inquirer that found no possibility for itself to yield to the mere will of the stormier man of action.

But it was in these experiences that the unformed collegian thawed—thawed into the man and the gentleman of the world. That was what the voyage did for the manhood of Charles Darwin, and it was more important—for him at least—than what resulted for

the science of the naturalist. "Professor De Candolle has described a visit to Down," writes Mr. Francis Darwin in his first volume, p. 139, "and speaks of my father's manner as resembling that of a 'savant' of Oxford or Cambridge: this does not strike me as quite a good comparison; in his ease and naturalness there was more of the manner of some soldiers." There is not one letter that is printed in these three volumes which does not confirm this of Darwin; and it came from his intercourse with the gentlemen of the *Beagle* in their free speech and generally free, untrammelled ways of the world. It was just as though, returning home from the Continent in the somewhat closely-fitting sleeves of the Germans, his tailor had said to him, "These are not ill-made; but now, sir, we shall see how you will look in our looser English garments." Alluding to the Cambridge professors and to Henslow's evenings, Mr. Darwin once writes (i. 187), "I have listened to the great men of those days, conversing on all sorts of subjects, with the most varied and brilliant powers:" it was on very different subjects, and in a very different manner, and with very different expressions, that he heard the young men on the *Beagle* conversing. He might have come straight from the ship when, in 1860 (ii. 351), he wrote the redoubtable T. H.: "My dear Huxley,—For Heaven's sake don't write an anti-Darwinian article; you would do it so confoundedly well. I have sometimes amused myself with thinking how I could best pitch into myself, and I believe I could give two or three good digs; but I will see you d——d first before I will try." It is not likely that Mr. Darwin would write so vernacularly to every one. Still it is remarkable how very vernacular, how uncommonly free and easy all these letters are. They abound with such exclamations, as these: "Good heavens!" "Bless my

soul, the accursed fact!" "it riles me dreadfully!" "God knows, it is odious and damnable!" "my everlasting abstract, my confounded book has half-killed me;" "God help him if he tries to read it!" "God only knows what I shall make of it!" "he floored me from my ignorance, by Jove!" "it rejoices the cockles of my heart!" "thank you for the dose of soft solder!" "it will be all nuts to me!" "am I not a poor devil?" "I shall get more kicks than ha'pennies!" "my most frequent source of doubt was whether others would not think this or that a God-created barnacle, and surely deserved a name;" "the devil take the whole book;" "it is a devil of a job;" "after what these have said, I do not care a d——n;" "I am shut up, and can only d——n the whole case;" as "not going to show the white feather;" "I can now afford to d——n my critics with ineffable complacency of mind." These, surely, are the tones, not of the savant, but of the man of the world; and his manners, as described, are those to suit. "His greeting was sailor-like," says Sir Joseph Hooker, "that is, delightfully frank and cordial." "Total absence of pretence or affectation," "absence of pose," "natural and simple way": of his father, Mr. Francis Darwin has these expressions. From these experiences of the world, the sweet blood of Mr. Darwin quite naturally took in, so to speak, the gentleman as gentleman. The whole intercourse and ways of him, even at home, were instinct with the same principles and feeling. His own daughter, Mrs. Litchfield, speaks so charmingly of "the singular modesty and graciousness of his nature." As she worked for him in correcting his proofs, she says, "he was always so full of gratitude for the trouble taken, and he used almost to excuse himself if he did not agree with any correction." Referring to his long-suffering on the raids of his children into the study

during work-time, she says also, "I remember his patient look when he said once, 'Don't you think you could not come in again? I have been interrupted very often.'" He always spoke to his servants with politeness, using the expression, "would you be so good?" in asking for anything. His lawyer says of his business replies to him, "Everything I did was right, and everything was profusely thanked for." Evidently, whether on board ship or elsewhere, Mr. Darwin, with all that was his own, had lived among English gentlemen to some purpose—without forgetting at the same time that, in that special reference, much that is more intrinsic has been already said, or is still to say. His son remarks on the courtesy and conciliatoriness of his tone even in his style; and no doubt correctly. Nay, does not his truth in writing run risk at times of being spoiled by the politeness of it? Even to his "Dear Hooker," he cannot speak of himself as a "fellow-labourer" without parenthetically adding "though myself a very weak one"—which, on the whole, rather is a fall on "the other;" not but that, if acquainted for five years, the correspondence between them was at the time a young one. Still the gentlemanly *tic* is there of ceremonious phrases and the 'right tone.'

There is a good deal of fastidiousness nowadays about the manners of those who are to be great only in themselves. But that the plain country doctor's son was a rich man, with horses and carriages and a full staff of servants, and all the ways of wealth, was no fall on "the other." Charles Darwin, with all that, had not one atom of pretension. *In* all that, for himself, for his children, for his father, nay, even grandfather, he may have had pride; but that pride was only a sound, and healthy, and thankful satisfaction. There was not a crease of his simplicity in it. Michael Angelo Titmarsh

himself would have been unable to detect one turn of the snob in him. As the student that meant well at college and would have only reputable associates, so he is not ashamed in after life to confess, on hint of Lyell's, that he has "the true English instinctive reverence for rank, and therefore liked to hear about the Princess Royal." It is with perfect openness he tells this same Lyell, "I dined at Chevening with Lord Mahon, who did me the great honour of calling on me—I was charmed with Lady Mahon, and any one might have been proud at the pieces of agreeableness which came from her beautiful lips with respect to you—I like old Lord Stanhope very much, though he abused Geology and Zoology heartily as all fiddle-faddle—I sometimes, after being a whole week employed, and having described perhaps only two species (of Cirrepedes), agree mentally with Lord Stanhope that it is all fiddle-faddle."

I know of only two occasions on which there is the slightest edge of a glimpse of snobbery on the part of Charles Darwin, and one of them, even if it were not frankly intentional (which it is), is not without a certain innocency and charm. He wants, namely, the *son's* opinion (who is as yet only Joseph) in regard to nuts found in Petrels' maws; but Sir W. Milner, Bart., being concerned, he asks him (Sir. W.) to write to the *father*—"for grandeur's sake!" ("I have asked him (but I doubt whether he will) to send a nut to Sir William Hooker (I gave this address for grandeur's sake) to see if *any of you* can name it and its native country—will you *please mention* this to Sir William Hooker?")

The other reference is to a remark—a sufficiently innocent one that occurs by the bye—in a charming letter of Mr. Darwin's from a Water-Cure to his wife (ii. 114). "And then," he says there, "I read a bit of my novel, which is feminine, etc.—I say femínine, for the author

is not much of a lady—she makes her men say, 'My Lady.'" Of course, I suppose it is only a servant, specially the lady's maid, that says, "My Lady," nowadays. But is it then so much better with the term Ladyship? Yet Mr. Darwin himself concludes a letter to Lady Dorothy Nevill (iii. 327) with such phrases as these: "And this I owe to your Ladyship's great kindness." "Your Ladyship's very gratefully." Most men know about Carlyle, and they are aware that he would not, even by mere expression, so prostrate himself as to say "My Lord." "I have no pocket definition of justice for Your Lordship, said one ancient figure, not then engaged in smoking, but if Your Lordship does not already know what justice is, then"—significantly pointing downwards! Carlyle, if he had known it, would, in all probability, have committed himself much less by a "My Lord" than by "Your Lordship." It is so pleasant to say "How do you do, my Lord!" in the entrance or on the stairs of one's club, that it will be long, it is likely, before such institution can do without the phrase. Emerson seemed inclined to be impatient of a "Lord," even if you told him, "Lord so and so is a great admirer of yours;" but he thought the simple Mr. of an English gentleman a higher title than that of any crowned head in Christendom. And as a very special example of the *rococo* of titles, fancy this inscription of Kant's to a Herr Bohlius: "To the Right-nobly born, Right-larned, and Right-skilful Master, Mr. John Christofer Bohlius, Doctor of Medicine and Second Ordinary Professor in the Academy of Königsberg, as also Royal Body-physician, my specially highly to be honoured Patron," etc. etc. Surely Bohlius himself ought, like Dogberry, to have thought himself very specially "written down an ass!"

Perhaps, then, with this current of ideas in our mind,

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it was a little snobbish in Mr. Darwin—especially after his own "Your Ladyship" and "Your Ladyship"—to call the poor authoress "not much of a lady," because in the novel which she wrote, her men said "My Lady."

CHAPTER IX.

CHARLES DARWIN—CONTINUED.

BUT even with such pleasant little conventionalisms exceptively to smile at, Charles Darwin had nothing of ignoble or vulgar in his nature. He was naturally gentle, and he was naturally firm. He was naturally σπουδαῖος, too—*strenuus;* always at work or in earnest. He knew "the golden rule for saving time:" he took care of the minutes. On board the *Beagle* he was indefatigable. He "studied attentively" Lyell; he watched his net at the stern, collecting, dissecting, describing its occasional contents; he wrote his *Journal* "during some part of the day, taking much pains to describe carefully and vividly all that he had seen; and this," he ingenuously adds, "was good practice." On shore he was in every way active, both as geologist and naturalist. These "various special studies were, however" (his own words) "of no importance compared with the *habit* of energetic industry and of concentrated attention to whatever I was engaged in, which I then acquired. Everything about which I thought or read was made to bear directly on what I had seen or was likely to see; and this habit of mind was continued during the five years of the voyage. I feel sure that it was this training which has enabled me to do whatever I have done in science." "I worked to the utmost," he

says again, "from the mere pleasure of investigation, and from my strong desire to add a few facts to the great mass of facts in natural science. But I was also ambitious to take a fair place among scientific men." It is very characteristic of the true man that, however he be when *in* the work, he yet, in his very truth, shivers *before* the work. And so, in his very strength, in his very ambition, in his very conscientiousness (which was an absolute one), he cannot help saying to his sister, "I feel my blood run cold at the quantity I have to do." It was precisely the same state of mind that led him to express a fear to Henslow as to whether he noted the right facts, and as to whether they were of sufficient importance. But let him in this his conscientiousness, and in that his industry, have *acquired* what habit he may, it must still be said that, in his very being, Charles Darwin was nothing if not *tenacious*.

We may indeed see that Charles Darwin was this (tenacious) from his infancy; for he was but a child when he signalised his tenacity by collecting all sorts of things —shells, seals, franks, coins, minerals, and by his perseverance in the attempts to make out the names of plants. He would sit for hours watching the float of his fishing-rod. He would read for hours the historical plays of Shakespeare. He "can boast that he read the *Excursion* twice through;" and, I doubt not, had it occurred to him, he might have been celebrated as the only man (or boy) that had ever read *through* the *Faery Queene once*. It was tenacity enabled him to recover his school standard of knowledge when he wanted to go to college, and so also always to pass his *Little-gos* and *Great-gos* there. He read Sir Joshua Reynolds simply through tenacity, and became for the instant quite an expert in painting; nor was it different with his application to music. "I have often heard him say," and it

is his own son who speaks, "that he got a kind of satisfaction in reading articles which he could not understand. For instance, he used to read nearly the whole of *Nature*, though so much of it deals with mathematics and physics." But that means the "good young man," too, who for "self-improvement" has interest in, and would have a try at, everything on earth that gives marks. He actually, as he says himself, "paid some attention to metaphysical subjects!" "But," he admits, "I was not well fitted for such studies." "I would never have succeeded with metaphysics or mathematics;" "facts compel me to conclude that my brain was never formed for much thinking." All the more do we see here, even in such attempts, a proof of his natural tenacity. He was tenacious in his hospital attendance; he was tenacious in his shooting. It was tenacity made him silent on his palpitations of the heart before the ship sailed: at all hazards, he simply *would* go. It was in the same mood that he wrote to his sister, "I daresay you expect I shall turn back at the Madeira; if I have a morsel of stomach left, I won't give up." He asks Mr. Wallace once (iii. 94), such and such questions being put, "what would you answer?" and adds, "I *could not* answer, *but should maintain my ground.*" So, when Huxley "demurs to his discussion on Classification, and says he has nailed his colours to the mast," Mr. Darwin can only set his teeth and (jokingly) declare, "I will sooner die than give up" (ii. 243). It is he himself, too, who says of himself, "I am not apt to follow blindly the lead of other men." And his son says of him, "It was his instinctive love of making out a difficulty which to a great extent kept him at work so patiently"—"he could not bear to be beaten"—"he often quoted the saying, 'It's dogged as does it,' and I think doggedness expresses his frame of mind almost better than perseverance." He

himself speaks (iii. 143) of "the intolerable desire he had not to be utterly baffled."

It is sufficiently remarkable that the same man that stood doggedly by his own self, was no less softly concessive to everybody else. We have but to remind ourselves in this respect of his own daughter's felicitous phrase, "the singular modesty and graciousness of his nature." And no doubt, generally speaking, one's own children are the best witnesses as to what may be called the distinctive peculiarity of one's character and conduct on the whole. If at all capable in themselves, they have certainly beside them the *means* of judgment. Of such evidence there is assuredly no want in the case of Mr. Darwin; and if we have not seen the whole of it, we have at least seen as much of it as is conclusively ample. The testimony here, it is right to point out, is exchanged too. If they speak well of him, he speaks well of them. Of Mrs. Darwin, he says once, "No one can be too kind to my dear wife, who is worth her weight in gold many times over." At another time when, in reference to his health, he cannot help sighing out, "I hope my life may be very short," the reason that saddens him is, "for to lie on a sofa all day and do nothing but give trouble to the best and kindest of wives and good dear children is dreadful." He is within a year of his death when he writes to Mr. Wallace, "I have everything to make me happy and contented, but life becomes very wearisome to me." Very different was his health both of body and of mind when, more than a score of years earlier, from a Water-Cure, as alluded to already, he wrote to his wife charmingly, "The weather is quite delicious. Yesterday, after writing to you, I strolled a little beyond the glade for an hour and a half, and enjoyed myself—the fresh yet dark green of the grand Scotch firs, the brown of the catkins of the old birches, with their white stems, and a fringe of distant

green from the larches, made an excessively pretty view. At last I fell fast asleep on the grass, and awoke with a chorus of birds singing around me, and squirrels running up the trees, and some woodpeckers laughing; and it was as pleasant and rural a scene as ever I saw, *and I did not care one penny how any of the beasts or birds had been formed.*"

These words are so charmingly descriptive, that we may give a brief space to an interpolation here of some other proofs (at least at one time) on Mr. Darwin's part of a general literary and intellectual power with which it has not been usual to credit him. It is from the *Journal* that I shall extract these. From p. 169, for example: "This was the first night which I passed under the open sky, with the gear of the recado (saddle of the Pampas) for my bed. There is high enjoyment in the independence of the Gaucho life—to be able at any moment to pull up your horse, and say, 'Here we will pass the night.' The death-like stillness of the plain, the dogs keeping watch, the gipsy-group of Gauchos making their beds round the fire, have left in my mind a strongly-marked picture of this first night, which will never be forgotten." From p. 20 this sentence is particularly striking: "A few fireflies flitted by us; and the solitary snipe, as it rose, uttered its plaintive cry; the distant and sullen roar of the sea scarcely broke the stillness of the night." One likes to hear Darwin giving way to feeling, as here (p. 26): "It is easy to specify the individual objects of admiration in these grand scenes; but it is not possible to give an adequate idea of the higher feelings of wonder, astonishment, and devotion which fill and elevate the mind." This from p. 329 is good description: "We observed to the south a ragged cloud of a dark reddish-brown colour. At first we thought that it was smoke from some great fire; but we soon found it was a swarm of locusts—flying at a rate of ten or fifteen miles an hour

—filling the air from a height of twenty feet to that, as it appeared, of two or three thousand above the ground; 'and the sound of their wings was as the sound of chariots of many horses running to battle;' when they alighted, they were more numerous than the leaves in the field." From p. 457: "Overhead, numerous gannets, frigate-birds, and terns rest on the trees. The gannets, sitting on their rude nests, gaze at one with a stupid yet angry air. The noddies, as their name expresses, are silly little creatures. But there is one charming bird; it is a small, snow-white tern, which smoothly hovers at the distance of a few feet above one's head, its large black eyes scanning, with great curiosity, your expression. Little imagination is required to fancy that so light and delicate a body must be tenanted by some wandering fairy spirit." P. 289: "The yelping of the guid-guid, and the sudden whew-whew of the cheucau," sometimes come from afar off, and sometimes from close at hand; the little black wren of Tierra del Fuego occasionally adds its cry; the creeper (Oxyurus) follows the intruder screaming and twittering; the humming-bird may be seen every now and then darting from side to side, and emitting, like an insect, its shrill chirp; lastly, from the top of some lofty tree the indistinct but plaintive note of the white-tufted tyrant-flycatcher (Myobius) may be noticed." P. 316: "It (the noise of the stones rattling over each other in the mountain torrents on the Cordilleras) was like thinking on time, where the minute that now glides past is irrecoverable: so was it with these stones; the ocean is their eternity, and each note of that wild music told of one more step towards their destiny." What speaks there is quite a metaphysical imagination, and the reader who consults the original will find the passage much fuller in it, and consequently grander. On p. 322 there is another very splendid passage, the concluding words of which are

these: "I felt glad that I was alone: it was like watching a thunderstorm, or hearing in full orchestra a chorus of the 'Messiah.'" Really, one feels penitent when one quotes all this! It was surely to some purpose that the young Darwin, even if imitatively, gave his attention at college to music and painting—nay, surely it was to a very absolute purpose that the schoolboy read, in that old window in the thick walls of the schoolroom, all that best poetry of ours, from Shakespeare and Milton, and Thomson, Gray, Scott, Wordsworth, Coleridge, Byron, Shelley. Darwin's diction, as we see, when need comes, is emphatically a literary one—let us think as we may, let Darwin himself think as he may, his reading must have sunk deep into him and, in effect, lived there.

Mr. Darwin calls himself to Mr. Galton a "Liberal or Radical," and we have seen that with Captain Fitz-Roy he bore himself as a somewhat bigoted Whig. His son, again, expresses himself of his father's opinion on political matters, as though it was "formed rather by the way than with any serious amount of thought." On the part of Mr. Francis Darwin there is power in the reflection; and it is doubtless true, as much else also is that concerns his father's later weakened interest in every consideration whatever but that of the Origin of Species. Still there was a time when Charles Darwin could politically *think*. It is thus that his fresh young mind, at its earliest, feels and deliberates in regard to the first savages of whom he has experience. P. 229: "The perfect equality among the individuals composing the Fuegian tribes must for a long time retard their civilisation. As we see those animals whose instinct compels them to live in society and obey a chief are most capable of improvement, so is it with the races of mankind. Whether we look at it as a cause or a consequence, the more civilised always have the most artificial govern-

ments. For instance, the inhabitants of Otaheite, who, when first discovered, were governed by hereditary kings, had arrived at a far higher grade than another branch of the same people, the New Zealanders—who, although benefited by being compelled to turn their attention to agriculture, were republicans in the most absolute sense. In Tierra del Fuego, until some chief shall arise with power sufficient to secure any acquired advantage, such as the domesticated animals, it seems scarcely possible that the political state of the country can be improved. At present, even a piece of cloth given to one is torn into shreds and distributed; and no one individual becomes richer than another. On the other hand, it is difficult to understand how a chief can arise till there is property of some sort by which he might manifest his superiority and increase his power."

This is a most remarkable passage, pregnant absolutely with the ultimate political truth—never for a moment to be expected on the part of either of the boy combatants, whether Tory captain or Whig naturalist. Surely this passage, if it were seen, and understood, and taken to heart, of any public, how shallow soever—surely it would go far to bring more lustre and importance to Darwin in his existence than even the *Origin of Species*. Here, very specially, is the entire lesson for the present moment in which socialism, on the one hand, and a miscellaneous and unguaranteed democracy on the other, are assumed to be, for the society of the future, the only elements at all in question. It is sufficiently strange that we should see such vital ideas as these in the mere stripling Darwin, when the man Darwin, if not simply distracted by an hereditary bee in his bonnet, was wholly absorbed in at least a questionable theory, the interest of which lay entirely, to say so, in bugs and beetles, and not in his fellow-man at all. One wonders that any one who, in the first

instance, could for a moment, or even by chance, think such ideas as the stripling, or who could be so absorbed and engrossed as the man, in the second instance, should still be zealous and jealous to be known as a "Liberal or Radical," at the same time, too, that "his opinions on these matters" (politics) were without "any serious amount of thought." But we must remember that Mr. Darwin was an Englishman withal,—at bottom a stubborn, determined Englishman,—and quite capable of political gall, of hating a Tory, simply as a Tory, with his whole heart. Though never was father more indulgent with his children, and "it was delightful to draw for him," yet here, too, he was the man, and could take on the negative; "he always looked closely at the drawing," it is said, and "easily detected mistakes or carelessness." We have seen the deliberately firm front he always bore to his young captain also. Then, we may almost say there was no man he was softer to, or even flattered more, than Sir Charles Lyell; yet see how determinedly he speaks his mind to him when he thinks that he has reason to be offended. And such reason was all too clear to him when he found Lyell, after having, as it most certainly seemed, unmistakeably declared himself for evolution, suddenly shilly-shallying, in his *Antiquity of Man*, back again into the arms of the creationists. The letters on this subject (instructive, too, as to both Lyell and Darwin laying stress on, first, variation, and second, selection, as the two moments constitutive and exhaustive of the special, proper, and peculiar theory concerned) are very interesting, and occur iii. 7–21. He who reads them will see that Mr. Darwin by no means minces matters with Lyell; for all his habitual deference to him, he tells him his mind. This is admirable here, too, that Mr. Darwin does not express himself one whit stronger to Hooker than to

Lyell himself. There may be a certain biplicity of kindness and courtesy in Mr. Darwin; but there is no duplicity of his essential manhood and truth. With whatever delicacy of foliage, he is still the oak.

If without "any serious amount of thought," then, as his son says, Mr. Darwin was still so much one of his countrymen that he must be a party politician and firm. It coheres with the more philosophical political ideas on his part in the *Journal* that, at p. 295 of this book, when speaking of the Indians in the district of Cucao, on the west coast of Chiloe, we have, sympathetically, this from him: "These Indians end all their complaints by saying, 'And it is only because we are poor Indians, and know nothing; *but it was not so when we had a king.*'"

It belongs to the general consideration here also to notice that, with whatever grave intellectual views, there was in Darwin, in these days, a vein of humour as well. There are several passages in the *Journal* to prove this. I shall only mention the one, however, in the perusal of which I had actually to give vent to an irrepressible guffaw. It concerns an anecdote related by Mr. Darwin in reference to an amusing circumstance that occurred to him and his attendants when they were at a great height on the Andes. "At the place where we slept," says Mr. Darwin, p. 324, "water necessarily boiled, from the diminished pressure of the atmosphere, at a lower temperature than it does in a less lofty country. Hence the potatoes, after remaining for some hours in the boiling water, were nearly as hard as ever. The pot was left on the fire all night, and next morning it was boiled again, but yet the potatoes were not cooked. I found out this by overhearing my two companions discussing the cause; they had come to the simple conclusion 'that the cursed pot (which was a new one) did not choose to boil potatoes.'"

CHAPTER X.

CHARLES DARWIN—CONTINUED.

FROM the evidence of the *Journal*, then, it seems not unlikely that the young Darwin was a more concrete human being than the older, mature, illustrious Darwin when at last struck, as it were, into a single abstract thought,—*Necessary variation of accident, taken advantage of and applied by nature to a new organic use, with the inevitable ultimate result of a new species.*

That is, accurately, totally, and absolutely, the single, simple, one action postulated by Mr. Darwin for the Origin of Species by means of Natural Selection.

That apart, however, the general character of Mr. Darwin, intellectual and other, must, in the course of this writing, have been gradually clearing itself for us. It takes the pouring on of chemicals to crisp into an image the nebula upon the plate. Natural history was, from the first and emphatically, his single bent, as it were his single vital stir, his one constitutive natural nisus. The term *stir* comes up here not *un*significantly; for it was *stir* that alone claimed his attention, *stir* that alone woke his single natural life. It may be said, indeed, that Charles Darwin's destiny in life was to watch physical movement —physical movement from the stir of an insect in the dust to the explosion of an earthquake all around. So it was that he had no turn for languages. Observation

is an affair of the eyes—shallow, so far, and on the surface; but ideas, and their expression no less, spring rather from the depth—the cerebral depth—of the ears. The most magistral of bards have sung the griefs of the blind; but there are no poets of the deaf. The deaf cannot sing.

The stir of a beetle in the dust was the first stir that arrested the interest of a Darwin: the convulsion of a continent was possibly the last. Charles Darwin was a naturalist and a geologist; and he was—on the general level implied—nothing else. The evidence of this is ample,—discounting, that is, all that material, exceptional and by the way, which we have just signalised in the *Journal*. "He certainly had a bad ear for vocal sounds." This (i. 126) is the emphatic testimony of his own son. Mr. Darwin himself intimates once, a little latish in life (iii. 315): "The only approach to work which I can do is to *look*"—as it was then—"at tendrils and climbers." It was the "*movements* of plants" ("the job which I have in hand") constituted the *stir* which attracted his eyes at that moment (iii. 332). "This," he adds, "does not distress my weakened brain." "From my earliest youth," he says elsewhere, "I have had the strongest desire to understand or explain whatever I *observed*." We have seen already how he was absorbed into his beetles; and we have heard it already that then, as a boy (i. 35), "he took much pleasure in *watching* birds." Despite his very genuine and deep-seated modesty, he can admit to his own credit this little (i. 103): "I think I am superior to the common run of men in *noticing* things—my industry has been nearly as great as it could have been in *the collection and observation of facts*." His first discovery, and his first scientific paper, concerned movement (i. 39): "I made one interesting little discovery, and read a paper on the subject—that the so-called ova of Flustra had the power of independent

movement by means of cilia." He was seventeen then. One of the last things he wrote (the date is April 1881) was in expression of surprise (rather contemptuous surprise), that Carlyle "thought it a most ridiculous thing that any one should care whether a glacier moved a little quicker, or a little slower, or moved at all." One may feel some surprise (not contempt) at Mr. Darwin himself here: I fancy, as we get on in life, we all take somewhat easily, or even rather expect, all manner of similar bad shots on the part of strangers to our own immediate leading article; and so one may lift eyebrows a little to find courteous Mr. Darwin so much of an exception. But, utterly possessed as his very soul was —captivated, fascinated, mesmerised—by the enchantment of physical movement, it would seem that, forgetful of his way with old Lord Stanhope, Charles Darwin could not forgive Thomas Carlyle for presuming to think such signal and glaring instance of it (such movement) "fiddle-faddle." All had been so different with him! To him, namely, what had that "well-known large erratic boulder in the town of Shrewsbury, called the *bell-stone*," not proved? Here was a question of movement, but it was mysterious and unfathomable. For he was but fifteen when old Mr. Cotton told him (i. 41) "that there was no rock of the same kind nearer than Cumberland or Scotland, and solemnly assured him that the world would come to an end before any one would be able to explain how this stone came where it now lay." What a charm for Mr. Darwin it must have given to a glacier, that it explained this! The whole tendency of his nature, indeed, towards movement, and towards the observation of movement, must have been greatly supported, stimulated, fostered by such a circumstance as the glacier-borne "*bell-stone*."

"There is to me incomparably more interest in observ-

ing than in writing," he says (iii. 262); and again (to Hooker), "there is an extraordinary pleasure in pure observation,"—"after having been so long employed in writing it is delightful to use one's eyes and fingers again." The fingers only corollarily count; but here are the eyes and the observation. It is, similarly, only in the practical direction that his son remarks (i. 150): "He enjoyed experimenting much more than work which only entailed reasoning." But, when the addition follows, "it was perhaps this delight in work requiring observation that made him value praise given to his observing powers almost more than appreciation of his other qualities," one cannot help remembering the dissident position in this avowal of Mr. Darwin's own (i. 103): "Some of my critics have said, 'Oh, he is a good observer, but he has no power of reasoning!' I do not think that this can be true, for the *Origin of Species* is one long argument from the beginning to the end." The philosopher (Brown, say) wishes to have the praise of the poet, and so Mr. Darwin, quite safe as an observer, cannot help a wistful look to the ranks of the reasoners. Still, for all his hankering, and even his look, Charles Darwin knows well that it is observation is his power. As late as 1874 he writes (iii. 193): "I find that my mind is so fixed by the inductive method, that I cannot appreciate deductive reasoning: I must begin with a good body of *facts*—and then as much deduction as you please." He had already confessed in 1872, "I know not why, but I never feel convinced by deduction, even in the case of H. Spencer's writings." What leads either the deduction or the induction may be only the hereditary bee; but it is the "*facts*" here are the point: they came to Darwin simply from observation and the eyes.[1]

[1] Readers of the *Journal* will have fully in mind how Mr. Darwin is only using his eyes there in every paragraph and almost

Charles Darwin, when no more than ten years old, was already an eager, and intent, and constant observer of all that moved around him; but even six years later, this same Charles Darwin was considered by his masters and not less by his own father "as a very ordinary boy, rather below the common standard in intellect." Further, notwithstanding the sort of occasional conquests due to his conscientiousness and tenacity, it is certain that, even in his own opinion, so far as their business proper was concerned, both school and college were for him failures. "The school as a means of education to me was simply a blank;" "during the three years which I spent at Cambridge my time was wasted, as far as the academical studies were concerned, as completely as at Edinburgh and at school:" these are his own words, and they admit not of dispute (i. 46).

And here we may moralise a moment on the two classes of men, the indoors and the outdoors men (as they may be called), even when it is an interest of the intellect that animates both—an interest in both, too, that is at least to end in emulation. Intellectual curiosity, intellectual emulation, alike characterises the one and the other. Any such emulation may be denied for Darwin; but it lay deep in his nature, and was a power that moved him. He says himself (i. 63): "I was ambitious to take a fair place among scientific men;" and (p. 103): "My love of natural science has been much aided by the ambition to be esteemed by my fellow naturalists." It was only ambition, likewise, at

in every line. "I was often interested," he says, "by watching the clouds," or, "sitting down on a block of granite, it was delightful to watch the various insects and birds as they flew past." He seems ever all eyes for earth and air and light, and all that in them stirs, were it but colours. On the whole, however, he is unceasingly on the watch for his dear beetles. "I never returned empty-handed," he cried; "in one day I caught sixty-eight species!"

least latent, that impelled the youth of eighteen to listen with zeal and curiosity to the literary celebrity (Sir J. Mackintosh), whom he did not understand, as to glow with pride at the commendation which he met with from him.[1]

It is strange, the sort of constitutive incapacity which, like other outdoors men, Charles Darwin manifested in regard to progression through books. What a different mind, what a different life, the mind and life of a Darwin from the mind and life of a Hume or a Kant! What repugns him are the very conditions of them. Darwin and Hume, or Darwin and Kant! As the one would have been absolutely null with nothing but books, so the other, no matter which, would have been absolutely null without them. Seven years at school, five years at universities—these twelve years Mr. Darwin declares, so far as what was academically given him is concerned, to have been "completely wasted." It was probably a misfortune, at least for Hume, that he had not such an advantage. Mr. Darwin was not quite just—and we have instanced his diction here—to his literary education—Mr. Darwin, of course, was a most intelligent man, who could read books, and who did read books; but even

[1] Mr. Darwin (i. 393) writes to his friend Hooker in 1854: "I am glad you have shown a little bit of ambition about your *Journal*, for you must know that I have often abused you for not caring more about fame, though, at the same time, I must confess I have envied and honoured you for being so free of this 'last infirmity of, etc.'" Five years earlier (i. 375), he had already expressed to the same friend his contempt for the usual dispensers of what is considered fame: "I saw the review in the ——; it was written in an ill-natured spirit. No one, nowadays, cares for reviews. I may just mention that my *Journal* got some *real good* abuse, 'presumption,' etc.—ended with saying that the volume appeared 'made up of the scraps and rubbish of the author's portfolio.'—Whether your letters are adapted for the —— (in which I have no interest; the beasts not even having *noticed* my three geological volumes), I have come to the conclusion it is better not to send them."

if what he read was what Hume read, or what Kant read—a contingency, possibly, rare rather!—he could not read, and he did not read, as Hume read, or as Kant read. It was not in books that his life lay—it was not with books and through books that his soul grew. He was the exemplarily good young man that sought self-improvement for himself in all that was ticketed in society as right—music, painting, literature; but it was wholly and solely in physical movements of the earth, or on the earth and over the earth—it was only to these—really—that he could keep his eyes open. His letters are full of confessions to this effect. He acknowledges that he has to thank Mr. Herbert Spencer—who is "our great philosopher," of whom he suspects that "hereafter he will be looked at as by far the greatest living philosopher in England, perhaps equal to any that have lived"—for the exposition proper of "the principle of evolution," and even for the very phrase, "the survival of the fittest;" and yet—while thanking Mr. Fiske (iii. 193), of whom he says he "never in his life read so lucid an expositor and therefore thinker," for having crowned his wish "to know something about the views of the many great men whose doctrines he gives" (including Spencer's)—he declares, "with the exception of special points I did not even understand H. Spencer's general doctrine, for his style is too hard work for me;" and he adds: "Such parts of H. Spencer as I have read with care impress my mind with the idea of inexhaustible wealth of suggestion, but never convince me."[1] Of direct utterances, he says (i. 102): "I have no great quickness of apprehension or wit which

[1] Is not this, too, signally illustrative of the phase of intellect we are engaged on: "I fear *Pangenesis* is still-born; Bates says he has read it twice, and is not sure that he understands it. H. Spencer says the view is quite different from his (*and this is a great relief to me, as I feared to be accused of plagiarism, but utterly failed to be sure*

is so remarkable in some clever men, for instance, Huxley. I am therefore a poor critic: a paper or book, when first read, generally excites my admiration, and it is only after considerable reflection that I perceive the weak points" (an admission that significantly tells the whole story). "My power to follow a long and purely abstract train of thought is very limited" (in such abstract there are no moving objects to be seen and watched); "and therefore I could never have succeeded with metaphysics or mathematics." In regard to metaphysics there is a similar implication in an allusion to Janet (iii. 46): "As for M. Janet, he is a metaphysician, and such gentlemen are so acute that I think they often misunderstand common folk." Again, in the same reference, more explicitly he tells us (i. 69): "I read a good deal during these two years on various subjects, including some metaphysical books; but I was not well-fitted for such studies" (the conscientious self-improvement was still going on). His son says once: "In August he records that he read a good deal of various amusing books" and—"paid some attention to metaphysical subjects." Metaphysics and amusement! Yet, surely, it *is* amusing to learn (ii. 8) that his theory of natural selection would lead to the study of the whole of metaphysics. "My theory," he says there, "would give zest to recent and fossil comparative anatomy; it would lead to the study of instincts, heredity, and mind-heredity, whole of metaphysics." As yet, then, the study (metaphysics) has not been even led to, but, God be thanked! it will soon now be complete through knowledge of—instincts and heredity — mind-heredity! As regards mathematics, here is another avowal of his own (i. 46): "I attempted mathematics—but I got on very slowly—the work was repugnant to me, chiefly from my not being

what he meant, so thought it safest to give my view as almost the same as his), and he says he is not sure he understands it." ?

able to see any meaning in the early steps in algebra —I do not believe that I should ever have succeeded beyond a very low grade." His friend Herbert (i. 171) gives similar testimony: "He had, I imagine, no natural turn for mathematics, and he gave up his mathematical reading before he had mastered the first part of algebra, having had a special quarrel with Surds and the Binomial Theorem." Algebra, as so impalpable, might very well have proved impracticable to Mr. Darwin; but why should he not have been at home in Geometry? He had "intense satisfaction" in Euclid, he says: there were things, shapes, to look at there, had there been but some movement in them, as there is in beetles! Mr. Darwin is mournful at times over his own deficiencies as (ii. 150) to his friend Fox: "facts compel me to conclude that my brain was never formed for much thinking." Yet his tenacity was such that by diligence and assiduity he could take into his memory—though only for the moment —pretty well whatever he pleased—as indeed we have already seen. Thus (i. 22) he could learn, "with great facility, forty or fifty lines of Virgil or Homer while in morning chapel," but—"every verse was forgotten in forty-eight hours!" So it was also that, as we have seen, requiring to go to Cambridge, and finding that he "had actually forgotten, incredible as it may appear, almost everything which he had learnt, even to some few of the Greek letters," he yet soon contrived to recover his "school-standard of knowledge," and otherwise so to prepare himself as to pass, very creditably and respectably, his various examinations.

We hear of him reading "a little of Gibbon's history in the morning;" but there is no evidence of even as much as that abiding with him. He is in effect always to be found lamenting his unfortunate incapacity for what we may call book-work or indoors head-work.

"During my whole life I have been singularly incapable of mastering any language." So he loses Greek, even to some few of the letters. Latin—in that regard it is suggestive that he says (i. 385): "A boy who has learnt to stick at Latin and conquer its difficulties—ought to be able to stick at any labour!" When eager on a scheme about the Canary Islands, he applies himself to Spanish; but he finds it "intensely stupid." When it was proposed to him to become Secretary to the Geological Society, he is obliged to refer to his "ignorance of all languages, not knowing how to pronounce a *single* word of French: it would be disgraceful to the Society to have a Secretary who could not read French." The success of his theory in Germany is such that a very great number of books in that language are of the intensest interest to him, and he manages to mine his way in them to a meaning at times; but he confesses (ii. 278) to Professor Bronn — "I read German very slowly. — When any reasoning comes in, I find German excessively difficult to understand." More of his troubles with, as he called it (with an English *v*), the *verdammte* language, we can learn from i. 126 of the *Life and Letters*. It is here *à propos* of German that it is said, "he had a bad ear for vocal sounds;" but inability to pronounce even a "*single* word of French" is a still stronger testimony to the same effect. It is scarcely possible to imagine a more striking proof of the predominance of the eyes over the ears, or at least of the marked inferiority of the latter to the former on the part of Mr. Darwin.

CHAPTER XI.

CHARLES DARWIN—CONTINUED.

In further illustration here, we may refer to the decisions of Mr. Darwin himself in regard to celebrated or notorious contemporaries whom he had met in society. He mentions Lyell, Robert Brown, Sir J. Herschel, Humboldt, Sydney Smith, Macaulay, Motley, Grote, Babbage, Buckle, Carlyle. "Carlyle sometimes went on too long on the same subject—he silenced every one—Babbage, and Lyell, both of whom liked to talk—by haranguing without stop or pause, during a whole meal, on the advantages of silence. Carlyle sneered at almost every one: in my house one day he called Grote's *History* 'a fetid quagmire, with nothing spiritual about it.' I always thought that his sneers were partly jokes, but this now seems rather doubtful — I believe that his benevolence was real, though stained by not a little jealousy." He speaks of Carlyle's hearty laugh, and does justice to "his extraordinary power of drawing pictures of things and men—far more vivid, as it seems to me, than any drawn by Macaulay. Whether his pictures of men were true ones is another question." "His mind seemed to me a very narrow one." "He thought it a most ridiculous thing that any one should care" about the movements of a glacier. "He laughed to scorn the idea that a mathematician, such as Whewell, could

judge, as I maintained he could, of Goethe's views on light."

As concerns light, the question is of quality and not of quantity; and, so far, a *pure* mathematician, as a pure mathematician, as a non-expert, is out of court. But surely Whewell was much more than a pure mathematician. I do not know that—socially—Carlyle was ever much more than he would have been, if, with all his gifts and books, he had remained, like Jean Paul, in his mother's kitchen. I do not know that, in the true sense (in any sense, indeed, but in so far as he was a well-educated man of good intellect), Carlyle ever became a gentleman,—or even exactly what we call emphatically, perhaps, a man.[1] His laugh, so much talked of, was, after all, as it were, a scholastic laugh, or a laugh on scholastic principles (*i.e.* from the teeth outwards)—witness Jean Paul's laugh in *Sartor Resartus* at the proposal of a cast-iron king—rather than the jolly, hearty guffaw of a man who laughs simply as tickled to the marrow by humour. But Carlyle, besides being a great genius, a literary genius, that is, of the purest water, was a man that thought and felt intensely as to all that, theoretically, concerned truth and, morally, right; and so, consequently, he was unhappy in his time. Mere physical, material theory came to be dominant in it. It was wonderful, and to him hateful, how (to him) his shallow contemporary, Mill, whom he despised, foisted his abstract copy-lines on

[1] "Just as we never think that we know a man in his self, if we only know his *Geist* (for that, as always the higher, is always in a measure something so much the more impersonal, something independent of him, independent of his will), or just as we believe ourselves to know a man's *self* only when we know his heart: so is God truly personal to us only in revelation" (Schelling, xiv. 26).

The *Geist* may be one thing, but the clay is always another: and, after all, it was to expiscation of the clay that Carlyle himself was about the first to prompt us.

an applauding public. Carlyle, with his vivid soul, was all a-tremble in presence of opinions that to him contradicted the truth and the right; and his very keenest admirers who came daily nearest him were (though not without exceptions) precisely those whom physical, material pursuits occupied, and to whom the abstract copy-liners were their philosophers. Carlyle's intellectual life was a very unhappy one—all that he was minded should fail, he saw succeed. It is not difficult to understand the set of his mind, even from the way in which he speaks of the brothers, the two Darwins, Erasmus and Charles, and especially of the book of the latter ("wonderful to me, as indicating the capricious stupidity of mankind; never could read a page of it, or waste the least thought upon it"). We may bring what is here in regard specially home to us if we will think of Buckle and the instant success of the poor boy's big, foolishly vainglorious fungus of a volume. I never heard Carlyle on that theme; but I conversed on it with his brother John (who was melancholy about such "disorder"—by which he meant *Unfug*), and have no difficulty in realising to myself the miserable relative feelings of Thomas—that that should be thought *ächt*—that it should even found a school! The truth is that a feebler general public has seldom existed than what was atmosphere to Carlyle.

If, now, we turn to what Mr. Darwin says of Buckle (i. 74, ii. 110, 386), the whole scene with the three men becomes quite a *tableau vivant*—

"I (Darwin) was very glad to learn from him (Buckle) his system of collecting facts. He told me that he bought all the books which he read, and made a full index, to each, of the facts which he thought might prove serviceable to him. I asked him how at first he could judge what facts would be serviceable, and he answered that he did not know, but that a sort of instinct guided him. From

this habit of making indices, he was enabled to give the astonishing number of references on all sorts of subjects which may be found in his *History of Civilisation*. This book I thought most interesting, and read it twice, but I doubt whether his generalisations are worth anything. Buckle was a great talker, and I listened to him, saying hardly a word; nor indeed could I have done so, for he left no gaps. After I had moved away, he turned round to a friend and said, 'Well, Mr. Darwin's books are much better than his conversation.'"

It is a somewhat cheap admiration, that of Mr. Darwin's in regard to Buckle's "astonishing references;" for the admiration of an expert would rather have reflected on the amount of commonplace before it—the amount of commonplace implied in that vainglorious catalogue of mostly ordinary volumes—that are "only duodecimo and under" (or "octavo" is it?) when the size is not specially mentioned! Think of the sandy foundation of that wonderful list of writers with correspondent footnotes, *à propos* of the French Revolution! Are not the *tallies* wonderful—the keys with the locks to them—the numbers up, and the numbers down!

But, of course, it was natural that Mr. Darwin, thinking of his own indexes, should be interested in those of Mr. Buckle. To ask Buckle, however, how he knew beforehand what would prove serviceable to him was, on the part of Mr. Darwin, simply irony, barefaced, arrant irony; for, as it was only one idea (the bee) guided himself, so it was only the commonest, vulgarest, shallowest freethinking-ism (*Aufklärung*) guided Mr. Buckle. There could be no difficulty in either Mr. Buckle or Mr. Darwin finding his way through ten thousand volumes, inasmuch as both the one and the other had but a single thing to see. Neither need Mr. Buckle have called his eye for this "enlightenment" an "instinct!"

Earlier, Mr. Darwin wrote to his friend Hooker: "I was not much struck with the great Buckle, and I admired the way you stuck up about deduction and

induction. I am reading his book, which, with much sophistry, as it seems to me, is *wonderfully* clever and original, and with astounding knowledge." One likes to read this passage so far as it bears on Sir Joseph Hooker; for, very notably, in what concerns "deduction and induction," we have as glaring an instance as any that occurs anywhere in his big book of Mr. Buckle's peculiar mouthing, and Sir Joseph Hooker is well placed against it, but—then—further—Mr. Darwin himself——! "I hear, however, that the great Buckle highly approves of my book!"

One other reference, on Mr. Darwin's part, we find to Buckle. It is this—"Have you read Buckle's second volume? it has interested me greatly; I do not care whether his views are right or wrong, but I should think they contained much truth. There is a noble love of advancement and truth throughout; and to my taste he is the very best writer of the English language that ever lived, let the other be who he may." ("I hear, however, that the great Buckle," etc., ii. 315!)

Let it be as it may—grammatically or otherwise—with that "other" of Mr. Darwin's ("be he who he may!"), it is certainly to be acknowledged as true that there was in Buckle "a noble love of advancement and truth," if what that meant was only the "Revulsion"—the reaction, namely, back again to *Aufklärung*, against the more acquiescent political and religious views of the Scotts, Wordsworths, Coleridges, Southeys, which were themselves a reaction against the *Aufklärung* itself in the first instance, or, what is the same thing, against the religious, or anti-religious, *enlightenment* of the Humes, Gibbons, and the like. Buckle's whole soul was in that. Let him have reached, however, what depth he may in the understanding of it, he is never to be found beyond the externality of the shell—a shell in

regard of which the contents, the egg itself, had long disappeared.

Mr. Darwin's "instinct" was not far from the truth, when he doubted whether "his (Buckle's) generalisations are worth anything," and when in the same context the word "sophistry" occurred to him. But, surely, when he credits Buckle—whose knowledge consisted only of the most superficial propos of Hume, Voltaire, and Gibbon, whose knowledge then, really, and in simple and good truth, was only the ignorance of a flushed and conceited boy—surely when he credits Buckle with "astounding knowledge," and so names him, "to his taste," "the very best writer of the English language that ever lived"—surely he places that "taste" undeniably before us. That *taste* is a *stage*, judicially, in regard to literature, and books, and intelligence thereappertinent generally—the theme that is immediately present to us. No doubt Mr. Buckle's waters run very triumphantly, and with a swell—over the usual printing-press shallows; but what do they carry and what are they? The *enlightenment* of Hume, Voltaire, and Gibbon indignantly infused into the current commonplace of figures and phrases traditional to the pen, but big and tumid withal from the heated conviction of a schoolboy!

There is no theme—to take an instance—on which Mr. Buckle swells bigger than on Political Economy. And there is no theme on which his emphatic audacity of assurance is more emphatically an assurance, not of knowledge as he means it, but of ignorance as it is. The proof is undeniable even with appeal to no standard but his own. He is sure that "the practical value of this noble study (political economy, namely) is perhaps only fully known to the more advanced thinkers;" and he is equally sure of what is "the *corner-stone* of political

economy." It is a certain "discovery," he says; and that discovery is "the theory of rent."

"It is now known that price is a compound of wages and profit, and that rent is not an element of it, but a result of it. This discovery is the corner-stone of political economy; but it is established by an argument so long and so refined, that most minds are unable to pursue it without stumbling, and the majority of those who acquiesce in it are influenced by the great writers to whom they pay deference, and whose judgment they follow."

It is a noble humility to defer to those greater than ourselves; but where it is a point of judgment that is concerned, it is clearly the duty of the very humblest of us to verify it to our own selves before we commit ourselves to its tenor. It is to be feared that Mr. Buckle in effect admits here that, in regard of rent, he spared for the nonce his own great faculty and took on trust the conclusions of those great writers to whom he paid deference and whose judgment he followed.

No matter—the business here is rent. Now, when a man pays for piecework, he only, so to speak, pays for piece*work*—for the work, that is, in itself alone, and without relation to the various workmen who were employed upon it, and who, in proportion of their various abilities, produced it. Now, that is the theory of rent—the *proportion* of their abilities. With a full population, the cultivation of the poorest land will *pay*. That is, it will pay—the cultivator, but nobody else. But a land *richer*, or a land *better placed for the market*, will—at the same time that the cultivation of said poor land yields a profit—*pay this much, and more*. The more is rent. For if the poor land will pay the cultivator a profit, competition will easily supply any number of cultivators who, for the same profit, will part with the excess over it yielded by the more advantageous land. This excess, then, is rent. So long as lands vary

as much in their power of production as men vary in the productiveness of their strengths, and so long as need remains need, or cupidity, cupidity—why, then, just so long will rent remain the fixed necessity that it is—the advantage in *piecework* of much over less. A short time ago the price of coal being enormously high (by temporary artifice), seams a few inches thick were seen to be seized upon and actually worked—are they worked now, when the price has fallen to its previous norm ?

That is the same thing. The principle is transparent. Bigger profit—rent—is the accidental advantage of the better, or better-placed, land; as bigger profit, bigger wage, is the accidental advantage of the better workman, on piecework, or otherwise. Rent, in fact, is simply the result of inequality—the natural and unavoidable result of inequality anywhere—on the part, that is, of all things whatever that may be termed *productives*. The *praises* even, no less than the *prizes*, of men—the enormous price of the "*Angelus*"—nay, the transcendence of Shakespeare himself, is nothing but rent. Philosophy is about the only property which (of course unless it be a *Tulchan*) yields not a farthing of rent to —its *proprietor*. "I am in thousand-fold want," says Socrates, "through the service of the God."

The "argument" is not "so long and so refined, that most minds are unable to pursue it without stumbling." There are other such propos of his on the political economy in the knowledge of which Mr. Buckle desires undisguisedly to pass as an expert; and, estimated aright, they are no more than the empty but well-bawled parrot calls of the schoolroom. Under political economy, there are various very complex interests, or, we may say, institutions included, as, for example, banking and banks; but these apart, what are called the great laws of political economy—say in relation to

population, wages, profits, rent, etc.—are exceedingly simple, and they really do readily submit themselves to the common sense that will look at them. In fact, as regards political economy, even in its institutions, there is but one standard. One has to ask simply, let the relative consideration be as it may, what, in regard of it, will—as was said before—*pay*.

As was remarked, what concerned deduction and induction showed Mr. Buckle on quite a similar elevation; and it is in no wise different as regards that other, his great leading theme, statistics. Where laws are necessary, the numbers in account of them are necessary also; but it is vain to say as much of what is contingent. To note facts, and enumerate facts, affirmative, negative, on this side and on that, is to look for the key to them, the principle that originates them, the law they obey. But, in the absence of that law, that principle, that key, that master-fact, to call the numbers themselves, manipulate them as you will, principles and laws, master-facts and keys, is simply idle. Averages may be prophecies of a law, may hover dimly over a law, may lead to a law; but they are not themselves a law. Still by average numbers in certain contingencies, one gets at what may then answer as though it were a law—for the moment; but still it is only for the moment, support that moment on what numbers you may. An average that is only an average—and an average is had recourse to only when an average is all that can be had recourse to—such average names only what contingently happens, and what—*all remaining the same*—may be loosely expected, as mere happening, to happen again; but it is not a concrete in *rerum natura*, and brings no necessity of such. Because, as Mr. Emerson quotes, French statisticians show that one man in so many marries his grandmother, or eats shoe-leather, *must* one man in so

many continue to marry his grandmother, or eat shoe-leather? Suicides, murders, thefts, are conditioned by thousand-fold contingency, absolutely insusceptive of calculation, any uniformity that may be found for them as if on law, is but a uniformity, spurious, fallacious. So far as it is a *form;* it is no *principle*, generative, productive, pregnant: it is but a *formula*, no concrete, an abstract—a copy-line. An air of regularity may be given to such cases by numbers; but such regularity is an abstract, it is alone, connectionless, relationless, and tells nothing. Numbers so applied are but idle counters, arbitrarily in play. Mr. Buckle is particularly grand—swells bigger and more prophetically oracular than usual, when he has loftily to perorate on, and judicially to fulminate against, the folly of legislators who would restrain murder and set bounds to suicide even by Act of Parliament. It is only the so far fixed stability of society as it is, that warrants calculation, and so a certain assurance, as to length of life, number of fires, etc.

Evidently, all that has been said being, it follows that Mr. Darwin, however near the truth in his negative of Mr. Buckle, was, in all probability, not much less far from it in his affirmative.

As regards Carlyle, when Mr. Darwin speaks of him, with whatever justice so far, he is certainly no less relevantly revelant of his own self than when he speaks of Buckle. That bell-stone that came from Heaven knows where, was but a type of movement, and, as we have seen, movement, stir, without, was Mr. Darwin's call proper to speculation within. No wonder, then, that he could only stare in speechless astonishment at the man who had no interest in the movement even of a glacier. "I never met a man," says Mr. Darwin of Carlyle, "with a mind so ill-adapted for scientific

research." Scientific research meant for Mr. Darwin only the observation of movement, as in beetles, say; and there was no such accomplishment in Carlyle. He rather sought ever for the rest, and peace, and settlement of a single idea, if it were at all to be had—not for the excitement of movement on the surface of earth (that of poultry there, had it been even of the sacred chickens, Thomas would have tripudiated at)! But Carlyle in that, his seeking, was no less active in mind and enthusiastic than was Charles Darwin when he shouted to his sister his self-congratulations on the "fine opportunities" the *Beagle* would give him "for studying the infinite host of living beings." To that study, for the completion in his eyes of the scientific character, Darwin only adds geology—geology and natural history certainly constituted *him;* but was Carlyle nowhere in science because he happened, it may be, not to be so very far in these?

Mr. Darwin speaks well of Grote, and is highly scandalised that Carlyle should have called Grote's *History* "a fetid quagmire, with nothing spiritual about it." Carlyle had his own dialect; and, probably, no one but himself, though with the same thought to speak, would have used such qualifying terms as *fetid* and *quagmire.* Nevertheless, it is quite possible that the thought for which these terms stood was an eminently righteous one. Grote, in his position of author, was not what he was, or is, commonly supposed to be. His one advantage was that he could read German: and so it was that he had his place among the abstracts; who, like the Lakers, or other such fortunate congenial brotherhoods (and, whether well-founded or ill-founded, there are, profanely to say it, always such cliques, very much, as in the case of Carlyle for long, to the oppression of the single fighter), had supported themselves and

made good for themselves (by dint of mutual compliments) a somewhat exclusive and, for others, prescriptive, position with the public.—His one advantage was that he could read German, I say; and so it was that he had his place among the abstracts. They could not do without him, for example, when their manuals required some historical reference a little more recondite than usual, such as one might find, say, in Prantl only. And so just two references qualify Mr. Grote. As there is silver that is German silver, so there is Greek that is German Greek; and that German Greek, in the second place, may be understood to convey no wisdom but the wisdom—only in its most suicidal form too—singly, simply, and solely of these same abstracts. "The Protagorean Canon!" That "man is the measure of all things"—that is the only truth, but not when man is taken as *man*—no! only when man is taken as any particular individual man, Tom or Harry, Jim or Jack, Thomson or Robertson, Jones or Smith.

"That every opinion of every man is true"—That "as things appear to me, so they are to me, and as they appear to you, so they are to you:" "This theory is just and important if rightly understood and explained." (See the English Schwegler—note on Sophists.)

So says Mr. Grote; and his explanation—so far as we see only an idle tautology, explanation there is none required—amounts to this: There is only a "to me" and a "to you;" there is not an *is*, an "is in itself."

It really may be held, then, that the truth of Grote was with Carlyle when his writing was only nameable to him a "fetid quagmire, with nothing spiritual about it."

It is strange how much Carlyle has been misunderstood. He was a Conservative, even to be almost Toriest of Tories; and he passed through life pretty well for

"a Liberal or Radical." He was a fervid believer in religion (in his own way truly—see *Sartor Resartus*); and yet, for the public in general, he was simply to be called an infidel. He was most determinedly in himself the adherent of ideas, permanent and fixed; while to his enlightened admirers he knew far too much about the relativity of fancies for that. These same enlightened admirers, despite his own perpetual, most characteristic and peculiar *cries*, insisted on making him, too, only an abstract. And, for the abstracts, there is no such thing in existence as a concrete—a concrete in its own right, intrinsic, with its own sphere of immanent manifestation and concerted work. On the contrary, for them, all is extrinsic, relative, abstract, the result only of *opinion*, casual association. For such men there is no *Ansich*, only a *Seynfüranderes*—no truth, only an individual fancy. Carlyle was assuredly the opposite of all that.

CHAPTER XII.

CHARLES DARWIN—CONTINUED.

LITERARY opinions of Mr. Darwin's own may, in further illustration, be referred to here. We are told of the novels, for instance, which are read to him. Novels, he says (i. 101), "have been for years a wonderful relief and pleasure to me, and I often bless all novelists." In proof, he is very simple and honest, when, like all of us at first, High-school boy, or Boarding-school Miss, in regard to novels, he would have a law passed against their ending unhappily. It is in the same spirit he avows, "A novel, according to my taste, does not come into the first class unless it contains some person whom one can thoroughly love, and if a pretty woman all the better" (what would one's wife say)! "He would on no account know beforehand how a story finished." He "generally kept to the books of the day, obtained from a circulating library." For all that, "Walter Scott and Miss Austen with Mrs. Gaskell were read and re-read till they could be read no more." "He often spoke warmly in praise of *Silas Marner;*" but he did not care so much for the *Mill on the Floss.* Yet, after the scene where Mrs. Poyser puts her landlord to the rout and drives him before her with her knitting-needles, I know of nothing in all George Eliot so good as Mrs. Tulliver's visit, in the *Mill on the Floss*, to the enemy lawyer with

the propitiatory hen. Further, in fact, in the same novel, all about the Dobsons is in a similar vein, and excellent. It is curious that the very creatrix of all these characters spoke with disgust of the like of them in others. Moulder, the immortal Moulder, she actually shudders at. Yet, even with the Proudies (of course it is not meant to ignore or disparage here other admirable serious characters and purposes), is it certain that there is anything better in all Trollope than Dockwrath with Mr. Moulder and his fellow-bagmen in the Commercial Room of the Bull Inn, Leeds? I am sure, when one is dull, just to brighten one, one can go back to that scene again and again, though one fails, excellent as it is, to go through the whole novel (*Orley Farm*) even for a second time. Doubtless, it was only becoming in Miss Evans to play propriety and give herself the air of the "femme savante," when it was such a disgusting brute as that drunken bagman that was in front of her.

But as regards Mr. Darwin in a general literary reference, the summing up of his own, most candid and most accomplished, son, Mr. Francis, is, no doubt, the right one. "Charles Darwin," he says (i. 6), "had not the literary temperament which made Erasmus (the grandfather) a poet as well as a philosopher;" and (p. 125), "I do not think that his literary tastes and opinions were on a level with the rest of his mind." In fact, so far as what was concerned was a matter of reading or intellectual operation alone, then Mr. Darwin's own verdict on himself is the true one (ii. 150): "Facts compel me to conclude that my brain was never formed for much thinking." He, surely, had himself in his eye when he exclaimed to Fox, "Geology is a capital science to begin with, as it requires nothing but a little reading, thinking, and hammering." It was not by reading, at all events, but *practically*, that he himself was

introduced to geology; and it was practically, though with reading of Lyell, that he continued its study in the *Beagle*. He declared himself, in the end, that he "owed to the voyage the real training or education of his mind;" which training and education, further, *bekanntlich*, concerned alone "geology and the host of living beings."

On what Mr. Darwin laments as his "curious loss of the higher æsthetic tastes," as, for example, that, "now for many years," as he says, "I cannot endure to read a line of poetry—I have tried lately to read Shakespeare, and found it so intolerably dull that it nauseated me," one really in the circumstances cannot find it in one's heart to wonder much. It is a common experience that when some certain one pursuit is made the leading and absorbing one, all else fades around it into indifference; and as it was confessedly no natural taste, but only the good-will of right action, that led him to music, pictures, and literature, one is not surprised to find Mr. Darwin's function and faculty narrowing themselves into that one theory which alone occupies him. There is no relative atrophy of the brain, as (p. 101) he supposes, and his intellect is not dwarfed; it only asserts itself finally, all else being concurrent thereto, in the single strain which nature in the beginning gave it. What the *Beagle* observation did for the scientist, and what the *Beagle* intercourse did for the man, lived in him, and manifested itself in his regard to the last. What only is to be lamented is the limitation and circumscription into which that which he was specially made for—the whole interest of natural history—unavoidably fell. That and the consequent corollaries: those weak reflections philosophically in regard to design; and those still weaker, as of the commonest man of the day, in regard to positive religion.

I think it may be assumed now that we fairly see and understand Mr. Darwin: with his whole soul bent on the

observation of movement, but with a perfect goodwill to all else that was socially held good. He is the man *strenuus*, σπουδαῖος, of loving, affectionate heart, of family piety; of temper perfect in its sweetness, longsuffering, patience,—in its modesty, graciousness, and courtesy; yet adamant in its firmness, courage, tenacity,—in its unmoving and immovable truth to principle. He is possessed, withal, of such an inward horror of the tiniest tip of injustice—of such an inward loathing of the veriest verge of cruelty, that he trembles with apprehension before the arrangements of nature itself—an apprehension that, combined with the bee of his theory, leads to the young attitude to religion already in allusion.

On the whole, I know not that a single expression, as it were, can be adduced more typical of the entire man than this—"Then should be 'peace on earth, goodwill to men,' which, by the way, I always think" (it is he himself speaks, i. 174) "the most perfect description of happiness that words can give."

This, surely, is very comprehensive and complete. Still it may be well to add here the illustration of one or two of the more striking personal traits recorded of Mr. Darwin by his son.

We have seen already an instance or two of what we may call the *self-accusing, conscientious repentance* of Mr. Darwin. He had no sooner been tempted to make somewhat light of the early influence on him of his grandfather's *Zoonomia* and of the reference to Lamarck, than, with shame from within, he is obliged to add that perhaps, after all, there may be something in both respects. So, also, he has just told of being laughed at by the officers for quoting the Bible on board the *Beagle*, when he suddenly recollects that he has no business to compromise them, and instantly inserts the parenthesis ("though themselves orthodox"). We have seen, too,

how he cannot but endeavour, by propitiatory words, to do away with the effect that his political expressions, in his first letter after the voyage, may have had on his old captain, Fitz-Roy. Another somewhat amusing, but very telling, example in the same direction is what he feared was too much of a boast (i. 118), when he had said that in South America he killed twenty-three snipe in twenty-four shots, and so must anxiously append, "but they were not quite so wild as English snipe." He upbraids his own selfishness (i. 364) in keeping to himself the rare beetle he had caught near Jenyns Blomefield's vicarage, though that naturalist was then making collections for certain public purposes; but I suppose every one will be quite ready to forgive Darwin for even such a delinquency—in the case of a beetle! were there not the characteristic repentance present also to absolve it.

Mr. Darwin, in a letter (ii. 54) to Hooker, pleasantly admits to him—"When I wrote last I was going to triumph over you, for my experiment had in a slight degree succeeded; but this, with infinite baseness, I did not tell, in hopes that you would say that you would eat all the plants which I could raise after immersion.—The children at first were tremendously eager, and asked me often 'whether I should beat Dr. Hooker.'" It is at least with similar graciousness that, in mentioning to Lyell his dedication to him of the *Journal*, he subjoins, "Pray do not think that I am so silly as to suppose that my dedication can anyway gratify you, except so far as I trust you will receive it as a most sincere mark of my gratitude and friendship."

But of the ascribed repentance proper, so characteristic of Mr. Darwin, the best instances occur at iii. 53 sqq. One is told by Mr. Brodie Innes, and another by Mr. Romanes. To both gentlemen Mr. Darwin is obliged to present himself at untimely night hours, and to both only that

he might add certain inconsiderable riders to certain inconsiderable previous words of his own—the reason being that, until he had done so, he could not sleep! It is here, too, that his own son (William, I think), when, in regard to the prosecution of Governor Eyre for murder (to which Mr. Darwin had actually subscribed £10), he "had made some stupid remark," relates, "My father turned on me almost with fury, and told me, if those were my feelings, I had better go back to Southampton, etc. Next morning at seven o'clock, or so, he came into my bedroom, and sat on my bed, and said that he had not been able to sleep, from the thought that he had been so angry with me, and after a few more kind words he left me."

This last anecdote, one may remark, illustrates another little fact in our common humanity. The most finished man of the world may break down at times, and show a crack in the varnish. The late Lord Palmerston was not by nature as gentle, probably, as Charles Darwin was; but, more completely than any other man in this world, perhaps, he had turned himself inside out, so as to be without latency, and thoroughly self-possessed always; yet witness his burst pretty well of "fury" on Stirling of Keir, who had asked the ill-timed, and certainly very injudicious, question in the House, Was it the case that Napoleon in his will left a sum of money to the would-be assassin of the Duke of Wellington?

But as concerns the immediate point, Mr. Darwin's even painful delicacy of conscientiousness, we may just allude finally here to the anxieties he suffered from it in consequence of the calls made upon him by all sorts of unknown correspondents. He received, his son says, many letters from foolish, unscrupulous people; but "he used to say that if he did not answer them, he had it on his conscience afterwards,"—"at night anything which had vexed or troubled him in the day would haunt him, and

I think it was then that he suffered if he had not answered some troublesome person's letter." "He made a rule, nevertheless, of keeping *all* letters that he received —and all of them received replies" (i. 119, 124).

In all that we cannot but think of his signal tenderness of feeling and his extreme modesty always. So modest he was, that, to his boyish dream, if even Eddowes' newspaper (the local Shrewsbury print) "alluded to him 'as our deserving fellow-townsman,' his ambition would be amply gratified." While his tenderness again was such that he might be seen "gently touching a flower," in gratitude, as it were, and in the charm of its very delicacy. Anything like cruelty was an instant outrage to him. He could not look at performing dogs for thinking of the licks they must have received. His horror when he picked up a bird, not quite dead but lingering from a shot it had received on the previous day! He would not yield to anger, for "he was conscious that it had a tendency to multiply itself in the utterance." He was manlily irate, nevertheless, at anything that wore the aspect of injustice. The law of primogeniture was unjust, and "how atrociously unjust are the stamp laws, which render it so expensive for the poor man to buy his quarter of an acre: it makes one's blood burn with indignation" (i. 343). It was only of such parents (for the consort of a Darwin could only be another of himself) that the children could say (i. 138): "Our father and mother would not even wish to know what we were doing or thinking unless we wished to tell."

A perfect focus of this whole personal nature is to be found in all that relates to Mr. A. R. Wallace and his anticipation of the theory of natural selection. Mr. Darwin would have Mr. Wallace's essay, when it is sent him, published at once and before any paper of his own. He yields to the actual conjunct preliminary statement

proposed only in consequence of the representations of Lyell and Hooker. His one work, his whole life-long labour, is at stake, and there is not a feeling in the man but honour, an English gentleman's honour: "I would far rather burn my whole book, than that he or any other man should think that I had behaved in a paltry spirit."

And here, it is but just to add, the question is not only of one English gentleman, but two. Mr. Wallace, in the disinterestedness of his own self-annihilation, is as noble as Darwin; and this the Darwins themselves are prompt to declare. In fact, I know not but that in the whole incident, it is Mr. Wallace alone who has suffered —not that, on this side or on that, the will of man is to be blamed, but only the fatality of circumstance. Often in this world it would seem that it is not merit decides, but only the goddess *Fortuna*. With Mr. Darwin, if merit was supreme, so undoubtedly also was the favour of the Divinity.

I know not that it is illustrative of more than the general reader, to point out this reader's usual attitude, not to what is new *simpliciter*, but to what as new contradicts some belief or custom that as yet has been a matter of course. The initial reception, on the whole, of Mr. Darwin's theory was of that nature; and if he took it at all amiss, he might have reflected on how he himself felt when spiritualism, when mesmerism, when flint celts were first brought to his notice. "George hired a medium," he says (iii. 187), "who made the chairs, a flute, a bell, and candlestick, and fiery points jump about —how the man could possibly do what was done surpasses my understanding—the Lord have mercy on us all, if we have to believe such rubbish." Now it was just this that, to the horror of Mr. Darwin, Carlyle and others retorted on himself. Nor was it different as regards mesmerism, on which his son reports (i. 374) Mr.

Darwin to have been equally sceptical; whereas, for at least two-thirds of the way, the manifestations involved are parallel with facts—to little profit as yet truly. Celts he met in this wise (ii. 160): "Whether the pieces of flint are really tools—their numbers make me doubt—I came to the conclusion that they were angular fragments broken by ice action." It is at least interesting to find Mr. Darwin turn his back on others, precisely as others turned their backs on him.

That is a small, but still, so far, a veritable example of Mr. Darwin's genuineness of nature—what is told of his "pet economy in paper." In fact, Mr. Darwin, with all his tolerance, and all his liberality, and all his generosity, was, even in the midst of his riches, too *genuine* a man to waste—that is, *not* to be economical. He kept for notes, in an express portfolio, all the blank sheets of letters received; he wrote on the backs of old MS., etc.—nay, "his feeling about paper extended to waste-paper," and he saw with a sort of grudge, and "objected, half in fun, to the careless custom of throwing a spill into the fire" after use. It is, somehow, quite in accordance with the same simple solidity of nature that, before buying pigeons when he needs them for his experiments, he thinks it necessary to apply to an expert for some relative information ("before I go to a seller, I am really anxious to know something about them, not to expose my excessive ignorance," ii. 46). So, about investments, I can suppose him, when such necessities disagreeably or unexpectedly even, interrupt him in his one sole, all-absorbing occupation, to put questions to some supposed capable friend, or look at newspapers and share-lists, before writing his solicitor—Ah, but *his* solicitor was as much a gentleman and an honest man as himself ("he had never seen my father," says Mr. Francis, yet spoke of his letters to him, in which "everything I did

was right, and everything was profusely thanked for").

But we may now draw all this personal matter into a single point by consideration of his portraits. Each of the three volumes (*Life*, etc.) has its own specimen. Mr. Darwin is described as a tall man, six feet in height, broad-shouldered but not noticeably so, with a spare body and thin legs. His hair was brown, and his complexion, as I am tempted to interpret his own "rather sallow" and his son's "ruddy rather than sallow," a rustic reddish fair. From the circumference of it, "22¼ inches," his hat would be, as the manufacturers have it, at least a 7; which medium size was, as I take it, that in Kant's case also. The first of the portraits, of which a photograph, dated 1854, seems to have been the original, may allowably, from its place and otherwise, be assumed to be, generally, the most characteristic. It represents Mr. Darwin as, at the age of forty-five, he was just in his prime. With checked vest, checked neckcloth, and a certain honest, matter-of-fact look, it is an English squire-like face we see there. The head, bald, rises and rounds finely. The eyes, overhung by unusually projecting shaggy brows, look out honestly. They seem as if they had been made both for and by observation. The ridge above them is so steep that one might almost think a cleaver had struck across the line beneath it. The nose is quite what we might expect from Fitz-Roy's dislike to it as inexpressive whether of energy or quickness. It is shortish, smallish, turned-upish, dumpyish, common; it has an insignificant, and withal an innocent look. The mouth in this portrait is a very remarkable feature; and it is well seen, the face being beardless as yet, and framed only by a plain, close, gentlemanly side-whisker. It is the expression of it that is remarkable. In the other portraits the beard so far hides the mouth;

but we might almost fancy the expression in question to have disappeared from these. Especially in the last of them, all is serene, composed, and assured now (it is taken within a year of his death); there is a reflective look in it—almost a look, indeed, of rather sad reflection. On the other hand, it is the eyebrows that are the prominent feature in the remaining portrait. Each is shaggier now, with a terrier-like look; and the face itself seems smaller somehow, more set-like—is it as still in battle that it is set?

Returning now to the squire-like portrait of the checked waistcoat, the checked neckerchief, and the shaven face between the gentlemanly side-whiskers, with the fine bald forehead rounding down to the rugged ridge over the honest eyes, succeeded by the insignificant nose, the peculiar mouth, and the broadish chin, it is the mouth was specially remarked on. One fancies there is an expression on it as though hiding simple gratification at the compliment (of the sitting), but returning to a usual surface, as it were, of habitual unpretending plainness and unreflected, yet considerate, sincerity. And yet again that mouth seems almost to be saying, you are looking at me, and I fear you do not see much in me—I am not quite sure that you do not see an ignoramus in me, which perhaps I am and perhaps—with a twist of the chin!—I am not. But, with whatever shade of contradicting defiance, there is at the same time an expression, amiable and good, half of admitted, half of denied slowness. "He was at first inclined to rate everything too highly"—that (i. 57) seems somehow just to go with such a look. "I would as soon have died," he writes to Huxley (ii. 324), knowing well that he would be powerless to express himself in public—"I would as soon have died as tried to answer the Bishop in such an assembly." I know I am not quick is, virtually, a sort of frequent

avowal of Mr. Darwin's. We have, in the second volume (*op. cit.*), a specimen of his handwriting. There is not a bit of the writing-master in it. It seems, too, he had not the gift of drawing; and I fancy he neither liked driving nor carving; and if ever he played billiards or bagatelle, I rather think it was with the butt of the cue he struck.

PART II.

THE WORK.

CHAPTER I.

AUTHORITIES USED, COMPILATION, ETC.

In coming now to the "Work," it may in that regard suggest itself that what concerns Mr. Darwin's predecessors has been already discussed; so that there can further remain for us no more than his own. This, to be sure, even looking solely to what is printed, is, as work, not small. Happily, however, we have not to draw it all into consideration, but only what of it relates, more or less, to Mr. Darwin's peculiar views on the origin of species. True it is that perhaps after his earlier works—mostly connected with the voyage of the *Beagle*, and preceding (in 1858 say) the eve of his more specially respective publications—Charles Darwin never could, and never did, write anything without having at heart his one proper, single, and distinctive theory. That, then, the so-called theory of natural selection shall be our theme for the future; and in the prosecution of it we shall not think it necessary to travel beyond such writings of Mr. Darwin's as, whether

directly or indirectly, are determined by it. Nay, even in that respect, certain limits which we may observe require or demand a particular explanation.

The quarry, namely, which for our purposes we lay very specially under contribution, is, *The Life and Letters of Charles Darwin*, edited by his son, Francis Darwin (seventh thousand, revised, 1888). But the other relative works—as the *Origin of Species*, the *Descent of Man*, the *Expression of the Emotions*, together with that admirable volume, the *Journal of Researches*—have lain with us equally continuously at hand. As is well known, of theories of evolution in existence, there are more than one; and, in quotation from Mr. Darwin himself, there has been, partially, to this effect, already testimony (Lamarck shall have "done the subject harm, as has Mr. Vestiges, and as—some future naturalist will perhaps say—has Mr. D."). The theorists under the two former names do not seem to desire us to understand that they are in disagreement with the belief in the existence of design; and as for Dr. Erasmus Darwin, who, according to the Krause-book, shall have anticipated and preceded his grandson in every single element of the latter's theory except one, selection, namely, as the special lever of the necessary modification,—he, for his part, Dr. Erasmus Darwin, must be acknowledged to have been surpassed by no other such writer (if by any at all) in the reality of his reverence for design. But in this reference it is far otherwise with natural selection; and that is one reason why we prefer here the *Life and Letters* as the relative quarry of what for discussion is concerned. Respective silence or concealment, evasion or disguise—nothing of the sort is to be found there; there, on the contrary, all that relates to design is matter of express statement and open discourse.

Another reason is the superiority in simplicity and clearness of the familiar, everyday explanation to what shall be the full-length exposition, so to speak, of formality and purpose. Lastly, the chief reason is perhaps this that depends partly on the *matter* and partly on the *form* of the great book, the *Origin*, itself. The *matter*, for example, is greatly in excess of all that is required for the specialty of the theory in question. We may see as much as that very clearly if we but look from the one statement to the other. In the *Letters*, which are seen to have been written with no other intention, the most of them, than to win over to his doctrine such naturalists of repute as Sir Charles Lyell, Sir Joseph Hooker, and Dr. Asa Gray, it is that doctrine, and in its own constitutive moments, that by Mr. Darwin is alone discussed. He names indeed there also "the affinities, embryology, rudimentary organs, geological history, and geographical distribution of organic beings;" but he only names them—only names them *so*—so as I quote. It is in the *Origin* that he treats expressly and at full of each of these topics,—with the result that *they* largely are the matter of the book. Now the fact is that all these topics belong, on the whole, quite as much to all other evolutionary doctrines as to that of Darwin. Nay, let us but consider this, that, under a general *creationary* theory,—before any one evolutionary doctrine, Lamarckian, Vestigian, Erasmo-Darwinian, Carlo-Darwinian, or other, came up,—never, whether in affinities, or embryology, or geology, or geography, or even rudimentary organs, was there a single difficulty felt,—let us but consider this I say, and it will be plain to be seen that all that concerns affinities and the rest constitutes no fee-simple that shall be proper and peculiar to natural selection alone. The opposing doctrine that upheld creation

itself was not anomalistic, but always homologistic: it saw affinity and plan throughout all that lives. Mr. Darwin himself tells us of this in his *Journal* (p. 94). When he wrote then (in 1833), he had never a doubt of "the grand scheme, common to the present and past ages, on which organised beings have been *created*." Mr. Darwin's Reviewers just seem to have been similarly influenced; for he is perpetually grumbling at the whole of them for their neglect of the sacred affinities, geologies, geographies, etc. Yet what is his own example? His Lyells, Hookers, and Grays, as we have said, are all cheerfully let off for the affinities, etc., but they are pinned to variation and selection.

So far of the *matter*, then—as a matter common to all, it may be allowably, and for result, innocuously, omitted from consideration here, where it is what is specially Carlo-Darwinian that is alone in question,—where it is not so much *evolution* (certainly as a process in some form genuine) that is the subject contemplated, as only on the whole what is generally understood to be the Darwinian scheme of *natural selection*.

A like reason applies to the *form* of the book. That form is a compilation. Lyell, Hooker, Asa Gray, and Mr. Darwin himself rank as, and are, *workers* in science; and so it happens that, in the course of the correspondence that occupies the three volumes of the *Life and Letters*, the reader is made to understand that, among workers, *compilers* are but as objects of scoff. "To judge on a subject *on which one knows nothing:* compilers," says Mr. Darwin significantly, "*must* do this to a certain extent (you know I value and rank high compilers, being one myself)!" These words are plain, if jocose; and others such repeatedly occur in the same volumes, as, for example (ii. 97), these: "I sometimes despise myself as a poor compiler;" and again: "I have been led to

despise and laugh at myself as a compiler." But the best proof of the nature of his proceedings proper, compilation namely, lies in his own special description of them—

"In July (1837) I opened my first note-book for facts in relation to the *Origin of Species*, and never ceased working for the next twenty years"—"From September 1854 I devoted my whole time to arranging my huge pile of notes"—"I collected facts on a wholesale scale, by printed inquiries, by conversation with breeders and gardeners, and by extensive reading; when I see the list of books of all kinds which I read and abstracted, including whole series of journals and transactions, I am surprised at my industry"—"In 1856 I began to write out my views, on a scale three or four times as extensive as that which was afterwards followed in my *Origin of Species;* yet it was only an abstract of the materials which I had collected"—"Had I published on the scale in which I began to write, the book would have been four or five times as large as the *Origin*" (and yet have remained, as said, "itself only an 'abstract'"). "An immense number of facts collected from various sources"—"In several of my books, facts observed by others have been very extensively used"—"I keep from thirty to forty large portfolios, in cabinets with labelled shelves"—"I have bought many books, and at their ends I make an index of all the facts that concern my work"—"Of abstracts I have a large drawer full." These extracts are from the so-called "Autobiographical Chapter;" and all through the three volumes confirmatory expressions, direct and indirect, occur. Even as late as May 1880 (iii. 333) we have this: "Making notes on separate pieces of paper, I keep several scores of large portfolios, arranged on very thin shelves about two inches apart, and each shelf has its proper name or title; and I can thus put every memorandum into its proper place." We recollect, too, how, in regard to indexes, and in this direction generally, he put Buckle to profit: "I was very glad to learn from him his system of collecting facts." A compiler could but with some eagerness hail a compiler. Mr. Francis Darwin, too, in his *Reminiscences*, gives us much information to the same effect (i. 150–153).

Now, no doubt it belongs to a compiler both carefully to collect his facts and equally carefully to sift them; nor is Mr. Darwin without testimony to himself in either

respect. In a letter to Mr. Huxley (ii. 281, *note*), he writes: "The inaccuracy of the blessed gang (of which I am one) of compilers passes all bounds—I must show how we jolly fellows work;" and then follows an account of a circumstance which, in its triple rise of descriptive perversion, falls very little short of the successive stages of the three black crows. Just at the end of the Autobiographical Chapter, too, he records three cases of false statement of facts which, as such as are calculated to stultify compilers, he himself was the means of exposing. What in a way is a fourth case concerns the funny story of the bean-pod: "The beans this year have all grown on the wrong side!" All over England, newspaper after newspaper caught up the cry. Only Mr. Darwin's own gardener was too knowing a man to be taken in. "Oh no, sir," he said, "it must be a mistake, for the beans grow on the wrong side only on leap-year, and this is not leap-year!"

Mr. Darwin, however, with all his wakefulness, is still, he says (i. 104), "not very sceptical;" and he feels sure that other scientific men have suffered in their inquiries just by being so. There is even not altogether absent on the outside, so to speak, a sort of feeling that Mr. Darwin—I really have heard as much, and by experts, more than once said—was somewhat "easy" in the accounts which as a compiler he received. When one considers of it, indeed, something such seems not unlikely to have been the state of the case. It is quite certain (as will be clearer in the sequel) that there was no wish nearer his soul than the establishment of the physical origin of species. Every jot, and dot, and tittle of evidence that could be construed to make in any way for the end he wished was eagerly accepted—witness Hearne!

Who was he, Hearne?—who was that Hearne, the sole

and single man privileged to see "the first step by which conversion of a bear into a whale would be easy, would offer no difficulty?" "In North America the black bear was seen by Hearne swimming for hours with widely open mouth, thus catching, almost like a whale, insects in the water!" (See *Origin*, p. 141; see also Darwin to Lyell on the case, ii. 234, 235, 336.) If one consults the *Descent of Man*, one will find in it three references to a Hearne, no doubt the same. "Hearne, an excellent observer"—"that excellent observer Hearne," cries Mr. Darwin; and his authority in the footnote is, "A Journey from Prince of Wales Fort, 1796." That is almost a hundred years ago; surely by this time the bear will have got flippers, or at least the *bulbs* of them!

As we see, it was Mr. Darwin's habit to "collect facts on a wholesale scale," by "printed inquiries," by "conversation," and by "extensive reading;" and the result, "an immense number of facts collected from various sources," including this fact also, that "facts observed by others were (by him) very extensively used." Printed inquiries sent out to all and sundries, gardeners, breeders, dog-merchants,—conversations as at the gin-palace in the Borough,—an indiscriminate miscellaneous reading on the watch simply for any notice of a fact to wish,—surely such a method as this of compilation, if not loose, might be quite righteously termed "easy." So it is that, on the evidence of a single, we may almost say unknown man, Hearne, who wrote, may we not also almost say, an unknown book, nearly a hundred years ago, it is expected of us to believe the prodigious assertion, the actual miracle, that by swimming in water with an open mouth catching insects, "the conversion of a bear into a whale would be easy, would offer no difficulty!" There are readers, doubtless, who will say here, this is malicious—this is the making of a single extreme case

represent the matter of an entire and serious argument. But be it observed that at present we have not in view any illustration of the theory itself of Mr. Darwin. That will come later. What we have before us now is only the alleged *looseness* of Mr. Darwin in regard to the compilation of facts, as of his *ease* in regard to the acceptance of them. Nor can it be said with any truth that we exaggerate Mr. Darwin's faith, as it were, in how "this old tale of Hearne the hunter goes." Consultation of our references will justify on our part every word we use. Mr. Darwin will, at the bidding of Lyell, "strike out" the whale; but "it goes to his heart," and it is only "*le premier pas qui coûte.*" The whale *is* struck out—of the second edition. But compunction follows, to lie at his heart still, for sacrifice of an illustration in which the *salto mortale* of the conversion of species into species "would be easy," "would offer no difficulty!!" And all that concerns "the whale and bear" is deliberately restored in the end, to be read now even in the sixth edition.

But if any one should still doubt of this ascription to Mr. Darwin of the usual pre-expectant, not unsolicitous compilation, let him turn up the *Descent of Man* simply at hazard, and the very first page at which he opens will at once convince him. "The Rev. W. D. Fox informs me"—"Mr. Harrison Weir has inquired"—"this same gentleman has bred"—"Mr. R. Elliot informs me"—"Mr. F. Buckland has bred"—"in regard to moles it is said"—"Sir A. Smith remarks"—"Mr. Wright informs me"—"Mr. Barr states"—"Mr. Blenkison informs me" "Prosper Lucas quotes"—"Mr. H. Reeks assures me"—"Hoffberg says"—"A clergyman asserts"—"I am informed"—"from these facts there can be no doubt." Just let the reader follow example here and turn up such things, noting, too, how the whole flow of the proof

is literally nothing but a perpetual trickle of merely hypothetical and supposititious *wills* and *woulds*,—let him realise to himself what is absolutely the truth of this,—and I think he will be astounded that such a weight should be committed to so much that is at least *reedy*.

"Man, made in the image of God, was also made in the image of the ape." It is curious how that single line—in which the ape clause is alone serious—absolutely reflects the entire spirit of the compilation in hand, and not less that of the shallow enlightenment of the day. It is to be admitted, at the same time, that what is immediately signalised is of a more glaring quality in the *Descent* than it is in the *Origin*.

The compilation that is the *Origin*, for all that, has still, in the main, been conducted on the same principles. What the Germans call *Tendenz* pervades it throughout. *Tendenz* that would *annul* slavery pointed to the common origin both of the white and the black in Eden; but *Tendenz* that would *perpetuate* slavery knew that the parentage of the negro was wholly different and brute! And it is *Tendenz* that is the soul of the *Origin*.

I do not suppose there is any quality for which Mr. Darwin has got more credit than what is called candour. Nor do I suppose that any one who has read what we have anywhere hitherto said of Mr. Darwin would reproach us with having made him other than the most upright, honest, veracious, and candid of mankind. Candour is not only the essential characteristic which is seen in Mr. Darwin by others, and we may even say *all* others, but it seems claimed as not much less by himself. "What an illiberal sentence that is about my pretension to candour." These (ii. 313) are words of Mr. Darwin's own. He shows himself sensitive to that gird upon the part of the Edinburgh Reviewer to

his candour: that, at all events, candour, he has not been in the habit of hearing sneered at, or denied to him. And it must be said that were not candour understood to be a chief and distinctive feature of Mr. Darwin's character, what portrait we have hitherto here seen of him would be without drawing: it would be irrecognisable. Nevertheless *Tendenz* is the soul of the *Origin*.

CHAPTER II.

WHAT LED TO THE WORK AND THE SUCCESS OF IT.

WE have begun on the *Work*. And so here a word is necessary, as well on what it was in Mr. Darwin that led to the peculiarity of that work, as on what it was in others that at least contributed to the success of it. We shall take the latter clause, as simpler, first.

Mr. Darwin tells us—In regard to what "is no doubt the chief work of my life" (i. 86), "my first note-book was opened in July 1837" (i. 83). That work was, of course, *The Origin of Species by means of Natural Selection*. Now, almost from that time onwards to a very late period, there commenced and proceeded a very intimate correspondence on the part of Mr. Darwin with all that then was closest to him in the point of view of friendship and esteem. This correspondence may be divided on the whole into two periods, according as it covers dates that precede, or dates that succeed, the publication of the *Origin*. In a broad way we may say that all this that is here indicated is contained in the second volume of the *Life and Letters*, at the same time that not a little of it obtains as well throughout the whole of the third volume. There are only three or four correspondents to whom Mr. Darwin is critically confidential *before* publication of the *Origin;* and they are Lyell, Hooker, Asa Gray, and Wallace. There are many, so to speak, scattered corre-

spondents, say in receipt of single or only a few letters, *after* the publication of the *Origin* (some of which letters as explanatory are of less or more consequence); but still the four men named remain Mr. Darwin's chief correspondents,—with the addition of only one other as critically important as themselves, namely, Mr. Huxley. It is to these men that Mr. Darwin, in the thinking of his book, in the writing of his book, and in the fortune of his book, confides all that is nearest and dearest to the very centre of his soul. Especially is it Lyell, Hooker, and Asa Gray that he would win over to his theory all through, if it is Mr. Huxley who *becomes* far and away his most powerful propugnator in the end. Mr. Darwin's letters to Sir Joseph Hooker are much more numerous than those to the others; and many of them are, in the interest of explanations to the one theory that is concerned, very valuable. But Asa Gray and especially Lyell were the stubbornest to move; and it is, consequently, in what is said to them that we shall find the material that is relatively the most important. It is only, however, on the value of the support of these men that we are engaged at present; and it is fully in the consciousness of that value that Mr. Darwin writes to them.

The letters to Hooker, in number more than the double even of those to Lyell, which latter greatly exceed those to any other correspondent, glow ever with the warmest and sincerest feelings of the most intimate affection. There is affection in the letters to Lyell, too; but it is tempered with the admiration that is due to the greatest living geologist and withal the writer's master. With Dr. Asa Gray Mr. Darwin commences to correspond perhaps a year and a half later than his intimacy with Hooker fairly began, which itself was several years subsequent to that with Lyell; but between the two men,

Darwin and Gray, a very real and close bond of friendship grew. Evidently it was of the last importance to Mr. Darwin that he should contrive to bring over to the doctrine of propagation by descent three such established and powerful authorities. Why, with their support, failure was hardly to be feared. Asa Gray was, perhaps, *the* botantist and naturalist of America. Hooker, the son of the illustrious Sir William Hooker of Glasgow and Kew, was himself, though young, already a botanical potentate even as his father was. And as for Lyell, his name alone exacted the homage of every man of education, whether at home or abroad. If we find, then, Mr. Darwin straining every nerve to win these men, surely it will be impossible to think that it was, in the circumstances, other than natural and unavoidable. There is abundant expression to this effect in his correspondence with all three; and with whatever expression—let it even seem extravagant at times—there goes always sincerity. Disinterested testimony of this is amply at hand throughout the three volumes which the son, Mr. Francis, edits. His deep respect and esteem for Mr. A. R. Wallace, Darwin takes lavish occasion to make known almost to every correspondent; while, as for the others, what again he writes to Mr. Wallace alone is ample proof of his loyalty to them. Thus in one letter (ii. 310) he says: "Asa Gray fights like a hero in defence; Lyell keeps as firm as a tower, and this autumn will publish, and then declare his conversion, which is now universally known; I hope that you have received Hooker's splendid essay." At another time he refers (ii. 109) to "the almost preternatural sagacity of Lyell," or declares (ii. 146), that he looks on Hooker "as *by far* the most capable judge in Europe."

Mr. Darwin is to be found at times naming Dr. Carpenter as one of those to whom he owes most; and

from the few letters to him, we shall quote first, as thus (ii. 299 and 238)—

"My dear Carpenter,—I have this minute finished your review—I have not a criticism to make, for I object to not a word—I admire all—it is all so well balanced—it is impossible not to be struck with your extent of knowledge in geology, botany, and zoology." "My dear Carpenter,—I am perfectly delighted at your letter—it is a great thing to have got a great physiologist on our side—I am astonished at the candour shown by Lyell, Hooker, Huxley, and yourself."

To Huxley (ii. 232, 173) Darwin intimates: "There were three judges on whose decision I determined mentally to abide—Lyell, Hooker, and yourself"—"if you and two or three others think I am on the right road, I shall not care what the mob of naturalists think." It is always in the same grateful tone that Mr. Darwin writes to his "good and kind agent" (ii. 331, iii. 45)—"the best of critics and most learned man"—

"My dear Huxley,—If I do not pour out my admiration of your article, I shall explode—I never read anything better done—there is no one who writes like you; if I were in your shoes, I should tremble for my life"—"I should have said that there was only one man in England who could have written this essay, and that *you* were the man"—"I *really* know no one else whose judgment on the subject would be final with me"—"My dear Huxley,—I have been delighted to see your review, and as usual you pile honours high on my head"—"what a wonderful man you are—no mortal man will do half as much as you"—"I must tell you what Hooker said to me a few years ago: 'When I read Huxley, I feel quite infantile in intellect'—By Jove, I have felt the truth of this throughout your review—What a man you are—There are scores of splendid passages, and vivid flashes of wit"—"You appear to have piled, as on so many other occasions, honours high and thick on my old head—I well know how great a part you have played in establishing and spreading the belief in the descent theory" (ii. 253, iii. 29, 43, 113, 119, 148, 150, 240).

Mr. Huxley would have been more than mortal if such interjections of admiration had failed to gratify him, and

from a man whose habit it was to speak in the warmth of the moment. Even when he (Darwin) lets out to others a little edge of discontent at some little difference of opinion on the part of Huxley, it is never without eulogy. He writes to Lyell once (ii. 280)—

"I think it was a great pity that Huxley wasted so much time, in the lecture, on the preliminary remarks . . . but his lecture seemed to me very fine and very bold. I have remonstrated (and he agrees) against the impression that he would leave, that sterility was a universal and infallible criterion of species;" and again, a month or two later: "There is a *brilliant* review by Huxley, with capital hits, but I do not know that he much advances the subject. I *think* I have convinced him that he has hardly allowed weight enough to the case of varieties of plants being in some degrees sterile." To Hooker he writes (iii. 3): "I am very glad you like Huxley's Lectures. I have been very much struck with them, especially with the 'Philosophy of Induction.' I have quarrelled with him for overdoing sterility and ignoring cases from Gärtner and Kölreuter about sterile varieties. His geology is obscure; and I rather doubt about man's mind and language. But it seems to me *admirably* done." To Hooker, too (ii. 228), modesty forbids him sending a letter of "tremendous" praise from Huxley, which he should have liked to have done, "as he (Huxley) is very modest about himself."

We have seen already how (i. 102) he acknowledges that he has "no great quickness of apprehension or wit" as Huxley has; and "Huxley" is always so to him, the affectionately familiar "Huxley:" "did you perceive the *argumentum ad hominem*, Huxley," he says. He even gave to Mr. Huxley, Mr. Francis tells us (ii. 251), the "sobriquet" of "My General Agent." "You have done a real good turn in the Agency business!" This he might very well say—as we shall presently see.

To Asa Gray the communications are such as these, the first being exquisitely illustrative of the irresistible, playful, ingratiating manner of Mr. Darwin when he is

happy in his correspondent, and would perhaps on the whole like to please him—

"Honestly, I feel that it is quite ridiculous my writing you at such length on the subject; but as you have asked me, I do it gratefully, and write to you as I should to Hooker, who often laughs at me unmercifully, and I am sure you have better reason to do so" (ii. 64). "It is the highest possible gratification to me to think that you have found my book worth reading and reflection; for you and three others I put down in my own mind as the judges whose opinions I should value most of all" (p. 273). "Permit me to tell you that, before I had even corresponded with you, Hooker had shown me several of your letters (not of a private nature), and these gave me the warmest feeling of respect to you; and I should indeed be ungrateful if your letters to me, and all I have heard of you, had not strongly enhanced this feeling" (p. 120). "And now I cannot resist expressing my sincere admiration of your most clear powers of reasoning. As Hooker lately said in a note to me, you are, more than *any one* else, the thorough master of the subject. I declare that you know my book as well as I do myself; and bring to the question new lines of illustration and argument in a manner which excites my astonishment, and almost my envy.—My conclusion is that you have made a mistake in being a botanist, you ought to have been a lawyer" (p. 326). "You will be weary of my praise, but it does strike me as quite admirably argued, and so well and pleasantly written. Your many metaphors are inimitably good. I said in a former letter that you were a lawyer, but I made a gross mistake, I am sure that you are a poet. No, by Jove, I will tell you what you are, a hybrid, a complex cross of lawyer, poet, naturalist, and theologian! Was there ever such a monster seen before?" (p. 338).—"I remember once telling you a lot of trades which you ought to have followed, but now I am convinced that you are a born reviewer. By Jove, how well and often you hit the nail on the head!" (p. 373). "It is really almost a pleasure to receive stabs from so smooth, polished, and sharp a dagger as your pen" (p. 386). "If you review the book, I shall be very curious to see what you think of it, for I care more for your judgment than for that of almost any one else" (iii. 293).

As regards Sir Joseph Hooker it is almost unnecessary to quote, but I may give these few samples—

"My dear Hooker, it is a great thing for me to have so good, true, and old a friend as you. I owe much for science to my friends" (ii. 302). "Many thanks for your last Sunday's letter, which was one of the pleasantest I ever received in my life" (ii. 384). "I have for long years looked at you as my Public, and care more for your opinion than that of all the rest of the world" (iii. 306). "Now that I know that it (the review) is yours, I have re-read it, and, my kind and good friend, it has warmed my heart with all the honourable and noble things you say of me" (ii. 267). "I have just received your note with sincere grief; there is no help for it—I shall always look at your intention of coming here, under such circumstances, as the greatest proof of friendship I ever received from mortal man" (i. 360). "I then opened yours, and such is the effect of warmth, friendship, and kindness from one that is loved, that the very same fact, told as you told it, made me glow with pleasure till my very heart throbbed" (i. 389). "The amount of scientific work, in so many branches, which you have effected,—it is really grand" (i. 395). "I know I shall live to see you the first authority in Europe on that grand subject—Geographical Distribution" (i. 336). "What a splendid discussion you could write on the whole subject of variation! The cases discussed in your last note are valuable to me (though odious and damnable), as showing how profoundly ignorant we are on the causes of variation" (ii. 90). "If you see Lyell, will you tell him how truly grateful I feel for his kind interest in this affair of mine. You must know that I look at it as very important, for the reception of the view of species not being immutable, the fact of the greatest geologist and botanist in England taking *any sort of interest* in the subject. I am sure it will do much to break down prejudices" (ii. 127). "I am fully convinced that yours (Essays) are the most valuable ever published" (ii. 162). "I remember thinking, above a year ago, that if ever I lived to see Lyell, yourself, and Huxley come round,—I should feel that the subject is safe" (p. 175). "I have finished your essay,—to my judgment it is by far the grandest and most interesting essay, on subjects of the nature discussed, I have ever read;—over and over again I exclaimed, 'This beats all'" (p. 257). "I cannot find words strong enough to express my admiration of your essay" (p. 259). "You would have made a gigantic fortune as a barrister—the world would say, What a lawyer has been lost in a *mere* botanist!" (p. 275). "I enclose a criticism, a taste for the future—*Rev. S. Haughton's Address to the Geological Society, Dublin*—'This speculation of Messrs. Darwin and Wallace would not be worthy of notice were it not for the weight of authority of the

names (*i.e.* Lyell's and yours) under whose auspices it has been brought forward'" (p. 156). "How perfect and elaborated an essay it is—as far as my judgment goes, it is the most important discussion on the points in question ever published—it almost made me gloomy, partly from feeling I could not answer some points which theoretically I should have liked to have been different—I shall gnash my teeth and abuse you for having put so many hostile facts so confoundedly well—An *Oriental Naturalist*, with lots of imagination, and not too much regard to facts, is just the man to discuss species" (p. 41). "One thing I see most plainly, that without Lyell's, yours, Huxley's, and Carpenter's aid, my book would have been a mere flash in the pan" (p. 308).

But Mr. Darwin's letters to Sir Charles Lyell are perhaps the most interesting of all. Lyell, in fact, is the biggest fish; and it is the hooking of him that is wished, and watched, and waited for with the intensest interest —*mit der höchsten Spannung!* Still, it is always to be borne in mind that, as regards affection and admiration for Charles Lyell, it is only sincerity that beats at the heart of Charles Darwin. The acquaintance of the one with the other seems to have commenced as early as the very month (October) in 1836 which is the date of the return of the *Beagle*. Darwin is able to write to his friend Henslow even then: "Mr. Lyell has entered, in the *most* good-natured manner, and almost without being asked, into all my plans." A few days later he writes to his cousin and most familiar intimate, Fox: "Amongst the great scientific men, no one has been nearly so friendly and kind as Lyell. I have seen him several times, and feel inclined to like him much." Sir Charles Lyell died, February 22, 1875, in his seventy-eighth year; and pretty well down to that date the intimacy between Mr. Darwin and him seems to have lasted; we find (iii. 190) one letter from Darwin to Lyell as late as September 23, 1874, and it is subscribed "yours affectionately." Nevertheless, one cannot help fancying that a certain

coldness fell between the two men after the words of Lyell's in the *Antiquity of Man* on Natural Selection, and Darwin's letters on them to Lyell in return. We have seen this in allusion already. The date of it was March–April 1863. After that date, up to the letter of September 23, 1874, there appear in the collection, and that, too, only *sparsim*, during an interval of eleven years and some months, no more than seven letters.

The first letter in the whole correspondence which we are allowed to see from Darwin to Lyell bears the date August 9, 1838; so that from that time onwards to March 1863, we have before us (at least on the one side) a correspondence of a quarter of a century's duration, and of the most intimate and familiar friendship on the part of both of the penmen. It is from that correspondence that we proceed to quote, in illustration now of Darwin with Lyell, as previously of Darwin with the others.

"I repeat, I am full of admiration of it (the *Principles*), it is as clear as daylight, in fact I felt in many parts some mortification at thinking how geologists have laboured and struggled at proving what seems, as you have put it, so evidently probable—You have contrived to make it quite 'juicy,' as we used to say as children of a good story—Many a one, I trust, you will send there (to the *Principles*), and make them, like me, adorers of the good science of rock-breaking—I have come to one conclusion, which you will think proves me to be a very sensible man, namely, that whatever you say proves right" (i. 292). "You are the one man in Europe whose opinion of the general truth of a toughish argument I should always be most anxious to hear" (p. 301). "I have long wished to acknowledge that (as in the *Dedication* of the *Journal*) the chief part of whatever scientific merit this *Journal* and the other works of the author may possess, has been derived from studying the well-known and admirable *Principles of Geology*" (p. 337). "What glorious good that work has done—how I should rejoice to live to see you publish and discover another stage below the Silurian: it would be the grandest step possible, I think" (p. 342). "Farewell, my dear old patron" (ii. 68). "So, my master, forgive me" (p. 72). "Then I shall have the opinion of my two best and kindest friends"

(p. 118). "I have always thought you would make a first-rate Lord Chancellor; and I now appeal to you as a Lord Chancellor" (p. 119). Your name and Hooker's name appearing as in any way the least interested in my work will, I am certain, have the most important bearing in leading people to consider the subject without prejudice" (p. 130). "I shall be most deeply delighted if you do come round, especially if I have a fair share in the conversion, I shall then feel that my career is run, and care little whether I ever am good for anything again in this life—Believe me, my dear Lyell, your affectionate disciple" (p. 167). "As I regard your verdict as far more important in my own eyes, and I believe in the eyes of the world, than of any other dozen men, I am naturally very anxious about it" (p. 166). "Now I care not what the universal world says; I have always found you right, and certainly on this occasion I am not going to doubt for the first time—I look at you as my Lord High Chancellor in Natural Science" (p. 169). "And believe me, with cordial thanks, your ever attached disciple" (p. 174). "As you go as far as you do, I begin strongly to think, judging from myself, that you will go much further—*How slowly the older geologists admitted your grand views on existing geological causes of change!*" (p. 177). "You are right, there is a screw out here (*Madeira and Bermuda birds not peculiar*). I thought no one would have detected it" (p. 209). "It is no use trying to thank you; your kindness is beyond thanks: I will certainly leave out the whale and bear—I never even built a castle in the air of such success as it (my book) has met with; I do not mean the sale, but the impression it has made on you (whom I have always looked at as chief judge) and Hooker and Huxley" (p. 235). "I fully believe that I owe the comfort of the next few years of my life to your generous support, and that of a very few others" (p. 237). "As I have always said, I am well convinced that your opinions and writings will do far more to convince the world than mine. You will make a grand discussion on man. You are very bold in this, and I honour you" (p. 260). "I have so long looked at you as the type of cautious scientific judgment—What a grand immense benefit you conferred on me by getting Murray to publish my book" (p. 266). "How much I owe to you and Hooker!" (p. 280). "It shows me what a capital lawyer you would have made—but how much grander a field has science been than the law, though the latter might have made you Lord Kinnordy" (p. 289). "I cannot help wondering at your zeal about my book. I declare to heaven you seem to care as much about my book as I do myself. You have no right to be so

eminently unselfish" (p. 291). "I have laughed at Woodward thinking that you were a man who could be influenced in your judgment by the voice of the public" (p. 331). "I especially want your advice on one point, and you know I think you the wisest of men, and I shall be *absolutely guided by your advice*" (p. 349). "My dear Lyell,—I have been most deeply interested by your letter. You seem to have done the grandest work, and made the greatest step, of any one with respect to man" (p. 364).

I suppose no one in this world has ever been more liberally or more lavishly thanked, flattered, and bepraised than the recipients of the above. I fancy also that with whatever satisfaction any one of them may have received his own letters, he of them who is still alive must now, when he sees the rest, somewhat ruefully wonder which of them was really the one to Mr. Darwin who, as a lawyer, was to make a gigantic fortune and rise to be the Lord High Chancellor of England! But yet, probably, for all that, not one of them was, in the circumstances, thanked, flattered, and bepraised, for his deserts, too much. Carpenter had earned his place by his well-welcomed articles in the *National*, and *Medico-Chirurgical, Reviews*. Asa Gray had been incessantly and indefatigably active. Articles and Reviews without number he had written, as in the *Atlantic Monthly*, the *Annals of Natural History*, *Silliman's Journal*, etc. etc., besides superintending reprints in America, speaking at meetings, putting together pamphlets, etc. etc. Sir J. D. Hooker had a quite similar record: he too had both written and spoken, warmly in the one case, loudly in the other (as to the British Association at Nottingham in 1866, to the British Association as its President at Norwich in 1868, and in reply to Bishop Wilberforce at Oxford in the "tremendous" meeting of the British Association, 1860, etc. etc., almost *ad infinitum*). He was of signal service to Mr. Darwin, too, when he drew up alongside of Sir Charles Lyell at the great meeting of

the Linnean Society on the evening of July 1st, 1858. That meeting was, for the *Origin*, critical. It was then and there that the first boom of the coming battle was heard. Sir Charles Lyell and Sir Joseph Hooker together had to that authoritative Society a communication to make. It consisted in "the joint paper of Messrs. C. Darwin and A. Wallace, of which the full title was, On the Tendency of Species to form Varieties, and on the Perpetuation of Varieties and Species by Natural Means of Selection." Both Sir Charles Lyell and Sir Joseph Hooker "made a few remarks, chiefly with a view of impressing on those present the necessity of giving the most careful consideration to what they had heard." What happened further Sir Joseph describes thus: "The interest excited was intense, but the subject was too novel and too ominous for the old school to enter the lists, before armouring. After the meeting it was talked over with bated breath: Lyell's approval, and perhaps in a small way mine, as his lieutenant in the affair, rather overawed the Fellows, who would otherwise have flown out against the doctrine." The publication of this paper, so authoritatively communicated, could only, of course, still further attract attention and increase excitement; while Sir Charles Lyell and Sir Joseph Hooker must have continued in a variety of ways both publicly and privately to constitute foci of ever new and ever growing agitation. What in this way was undoubtedly most decisive, however, took place at Aberdeen, when Sir Charles Lyell, as President of the British Association in 1859, announced to that august body the proximate appearance of the *Origin of Species*. His referent words were these: "On this difficult and mysterious subject a work will very shortly appear by Mr. Charles Darwin, the result of twenty years of observations and experiments in Zoology, Botany, and Geology, by which he has

been led to the conclusion that those powers of nature which give rise to races and permanent varieties in animals and plants, are the same as those which in much longer periods produce species, and in a still longer series of ages give rise to differences of generic rank. He appears to me to have succeeded by his investigations and reasonings in throwing a flood of light on many classes of phenomena connected with the affinities, geographical distribution, and geological succession of organic beings, for which no other hypothesis has been able, or has even attempted to account." [1]

[1] There can be no doubt that these words of his struck Sir Charles himself as all too precipitate, when, four years later, he published his *Antiquity of Man*. So fervid in speech of expectation before, he immediately cooled after, seeing the book. He begins with objections the moment he reads it. These objections are for long only "a valuable lot of criticisms" to the sanguine author, who has never a doubt for all that but that his critic is his most faithful adherent. It is really touching, the innocent *propos* that, for a considerable time, in the implicitness of his faith, Darwin runs out into Lyell; and even more touching, perhaps, the signs of startled surprise that foreshadow at last his imminent awaking. He is quite thankful for long in the acceptance of all suggestions, and in modifying his pages accordingly. He hears nothing on the part of anybody, but he tells it to Lyell, as of Sedgwick, Watson, Crawford, Murchison, Herschell, Jardine, Whewell, innumerable others. Carpenter is a convert, he says; but he fears that Owen is "dead against us—he had very long interwiews with ——, which perhaps you (Lyell) would like to hear about. . . . I infer from several expressions that, at bottom, he goes an immense way with us—you will make a grand discussion on man, you are very bold in this, and I honour you—but it will horrify the world at first more than my whole volume—you used to caution me to be cautious about man—it makes me laugh to think what a joke it will be if I have to caution you—by the way, H. D. Rogers goes very far with us." In fact, it is really striking the amount of psychological interest that may be derived from the letters of Darwin to Lyell that occur between the dates of October 1859 and April 1863. Mr. Darwin seems to notice the first start he gets from Lyell in his letter to the latter of April 10th,

The way being so conspicuously prepared for it, and its appearance ushered in and heralded by a trumpet-

1860; but he does not let it take hold of him, he immediately passes it: "By the way, it is a great blow to me that you cannot admit the potency of natural selection: the more *I* think of it, the less I doubt it." Just five months later, however, there is this evidently much more decided start: "I grieve to see you hint at the creation 'of distinct successive types, as well as of a certain number of distinct aboriginal types.' Remember, if you admit this—you cut my throat; and your own throat; and I believe will live to be sorry for it." Between this September 12th, 1860, and March 6th, 1863, the correspondence is continued by only some ten letters. They are mostly at long intervals, as well as shorter, at the same time that their contents are less bright, and have more the character of intentional *propos* in support of what is gloomily feared to be doubted or denied.

The great burst, however, comes with the publication of the *Antiquity of Man:* it is now in the four letters between pp. 7 and 20 of vol. iii. that we have the disappointment and disgust of Mr. Darwin undisguised. Sixty-nine letters in twenty-five years precede these four letters of March–April 1863, and only seven follow them in the remaining eleven years of the life of their recipient. It is so that the Darwin-Lyell correspondence, in the way that is given us here to see it, is constituted. If Sir Charles Lyell believed in the creation of organised types not only at first, but from time to time afterwards, any evolution that could possibly remain to him would only be for the contempt and derision of a Darwin. Whatever, then, were his expectations at first, and whatever his vacillations in the middle, it is impossible to deny to Sir Charles Lyell a certain adherence to a creation of some sort in the end. In fact, what we have seen quoted from him by Mr. Darwin amounts, out and out, to no less than a creation wholesale. What he would leave for any process of natural variation and natural selection, *with* an aboriginal creation, followed, too, by a continued creation successively in time, is but the pretence of a compliment in the air. Mr. Huxley (ii. 190, 192), in his chapter "On the Reception," etc., would implicate evolution in the very teaching of Lyell; but to admit, as he does, that "to the end of his life he (Lyell) entertained a profound antipathy for the pithecoid origin of man," is, with every proof of vacillation and oscillation, to abandon Lyell to creation at last.

blowing so resonant and extraordinary, was it any wonder that the book itself was hailed with acclamation and received with even a rush of expectation? And we have now only to see how the proceedings of Mr. Huxley at the very first could but beet the excitement, that, so to speak, already blazed, into an absolute conflagration and a veritable fury.

Mr. Huxley was to Mr. Darwin "his good and kind agent for the propagation of the Gospel"—Natural Selection; and surely—with all these Speeches, Addresses, Lectures, Essays, Reviews, Articles, and other relative efforts on the part of Mr. Huxley before him—not without reason. In these respects we cannot venture to attempt to render an accurate list of all Mr. Huxley's labours; but we shall at least not be wrong in saying that—There were his Speeches at Oxford in answer to Owen and to the Bishop—there were his Addresses or Lectures at the Royal Institution and the School of Mines—there were his printed Essays—there were his Reviews in the *Westminster*, the *Contemporary*, and elsewhere — and there were his articles in *Nature*, the *Encyclopædia Britannica*, and the *Times*. The speeches at Oxford and the article in the *Times* may be specially signalised. In the former reference, Mr. Darwin wrote on July 20th, 1860, to Mr. Huxley himself: "From all that I hear from several quarters, it seems that Oxford did the subject great good—it is of enormous importance, the showing the world that a few first-rate men are not afraid of expressing their opinion." And in the latter reference, Mr. Francis Darwin (ii. 254) avows: "There can be no doubt that this powerful essay, appearing as it did in the leading daily journal, must have had a strong influence on the reading public." As for the lecture at the Royal Institution, too, while the prestige of the position is not to be forgotten, it is to be acknowledged

that no words whatever could have been more admirably calculated to move the audience. As Mr. Huxley it was even in Mr. Huxley himself to move. He was the king of the amphitheatre, and not a man of the day was a greater favourite with the public; inasmuch as he, perhaps, was the very ablest writer of information which, while instructive and expressly scientific, was, at the same time, also interesting, entertaining, and in the highest degree lucid.

The *Origin of Species* was published on the 24th November 1859. The *Times* article appeared on 26th December 1859. The lecture at the Royal Institution was delivered on the 10th February 1860. And of the speeches at Oxford the dates were 28th and 30th June 1860. Even from as much as this, then, it was impossible but that the subject must have been in most mouths in England in the course of a few months. As we all know, all in England is done by parties, and everything that appears in England is of no use whatever until it is made an affair of party. It was not different with the origin of species. Creation *or* Evolution became the party-question of the day; and it was debated at a temperature that was perfectly suffocating. Lecture-rooms rang with the subject, and not a periodical in the kingdom but glowed red-hot with it. I say Creation or Evolution; for, as usual, any nicety of distinction was not to be understood; and, whatever might be peculiar and specific in natural selection, it itself must mean, and could mean—"to the general"—only evolution. We would just suggest for the moment that this at once was a wandering from the question; which, as a question, was not of evolution as evolution, but of Mr. Darwin's special, proper, and particular theory of evolution.

It remains for us now to point to the immense share

in the excitement and general attention which must be attributed to Mr. Wallace. Mr. Darwin himself has again and again come to the front to declare that Mr. Wallace "has arrived at almost exactly the same general conclusions" as himself "on the origin of species, that "the theory of Natural Selection is promulgated by Mr. Wallace with admirable force and clearness." On the Waterloo day of 1858, he encloses to Lyell a communication from Mr. Wallace, in which a theory to his mind so very similar to his own (as yet unpublished) seems to have taken away his very breath in surprise. "I never saw a more striking coincidence," he cries; "if Wallace had my MS. sketch written out in 1842, he could not have made a better short abstract! Even his terms now stand as heads of my chapters." Of course for credence and acceptance, whether before the court of the law or the court of the public, it is an enormous advance when a second witness has come forward with the same story as a first. A first man is himself, in fact, a new man when he is supported by a second. That, then, is what Mr. Wallace was to Mr. Darwin; and the public interest, consequently, went on increasing in a more than geometrical ratio.

CHAPTER III.

WHAT LED TO THE SUCCESS—CONTINUED.

WITH all before it that has now been detailed, what could the public be expected to think? The most powerful scientific trumpets that, in these islands, could be blown, were blown—before the book. The most powerful popular trumpets that, in these islands, could be blown, were blown—after the book. And now what new, strange, and wonderful discovery the book itself described, that new, strange, and wonderful discovery, another man, a great man, a scientific man, an expert—an expert who had been himself to see—corroborated and confirmed. And new, strange, and wonderful indeed, the discovery was. All life that was on this earth, in the air above it, or in the waters under it—elephants and mice, minnows and whales, vultures, sparrows, and midges—had come, all of them, the one out of the other; and man—we ourselves—were just the descendants of monkeys! What could be expected for such a book, if not all but a universal rush to buy? Mr. Murray printed no fewer than 1250 copies of it, not one of which was left in his shop the very first day, and he made haste to throw off 3000 copies more!

And how did the public find the book? I do not suppose that any one will pretend that it is read now; and I do not suppose that any one will pretend that it

was read *through* then—unless by those, the few friends of science and the author, whom, in both respects, of course, it immediately and specially concerned. How could the public that bought the book, constituted as only a public can be (*i.e.* something after the pattern of the nine hundred guests that are nowadays invited to a marriage!)—how could such a public be expected to read the book? What sort of book is it? It ought to be very interesting—what more interesting than anecdotes and stories of Alligators, and Ants, and Apes, Asses and Arab Horses, Bees and Bats, and Birds, and Bears, and Whales—what more interesting, in fact, than just Geology and Zoology on the whole? But *is* it interesting? Well, his son tells us, "His (Darwin's) style has been much praised: it is, above all things, direct and clear;" and I do not think it will readily occur to any one to contradict as much. The book is plainly written; it is as plain as the plainstones beneath your feet—but how *are* they then—"your poor feet"? I know one man at least—who has read a good number of books, of all kinds, too, some of them not absolutely easy either—and he somehow has always felt the book and feared the book as so much lead. But that may be prejudice! What of the experts, the express personal friends who put the trumpets to their mouths? Much evidence may exist in this regard,—we, for our part, have only what the *Life and Letters* may show; and there we see a correspondence only on one side. We find few letters in the three volumes that are from the other side. Even the one or two letters to which we can refer consist, as acknowledgments on the part of the nearest personal friends, only for the most part of the usual congratulatory laudation.

Sir Charles Lyell having, as he says, just finished the volume, praises it much. He finds, however, "the con-

densation immense, too great perhaps for the uninitiated;" and he suggests that, when a new edition is called for, an actual case be inserted here and there "to relieve the vast number of abstract propositions." Hooker has "not yet attempted to read" the book, but "on the strength of two or three plunges," declares it "glorious." Nor after actual (so far) reading does he speak otherwise; but then also we have such expressions as these: "I have not yet got half through the book, not from want of will, but of time—for it is the very hardest book to read, to full profits, that I ever tried—it is so cram-full of matter and reasoning—the three volumes, unprefaced by this, would have choked any naturalist of the nineteenth century, and certainly have softened my brain in the operation of assimilating their contents. It is extremely clear as far as I have gone, but very hard to fully appreciate." Charles Kingsley has to say, "I fear I cannot read your book just now as I ought: all I have seen of it *awes* me; both with the heap of facts and the prestige of your name." "Poor dear Hooker is tired to death of my book," says Mr. Darwin himself (ii. 301); nor does his own experience on re-reading it seem to have been different. Once he declares, "it is tough reading, and I wish it were done;" while on another occasion he moans out, "it is intolerably dull" (iii. 31 and 65). He even cries (ii. 311), "No doubt the public has been *shamefully* imposed on! for they bought the book thinking that it would be nice easy reading."

I think any one who impartially considers these quotations will without hesitation admit that I have rather extenuated than exaggerated the sort of heaviness with which the book meets—at least some readers. How very different is the *Journal!*

"There are," says Schelling (*WW.* x. 100), "certain moral and other qualities, which a man *has*, only when

he has them *not*, or, as is well said, so far as he does not *anziehen* them, *put them on*. For example, grace is at all possible only in the non-knowledge of itself; whereas any one who knows his grace, who puts it on, has already lost it. It is the same with unconsciousness—*Unbefangenheit*. What is *unbefangen* is that which never at any time knows itself: directly it becomes conscious of itself, it is already *befangen*."

I fancy this perfectly well puts the comparative case of the two works. The *Origin*, as a *Befangenes*, contrasts with the *Journal* as an *Unbefangenes*. The one is as straitened, and stiff, and intentional, as the other is facile, free, and spontaneous. The one is all consciousness and thought; the other is thought, but it is without consciousness. The one is nothing but preparation; the other is only growth. In short, the one is artifice, while the other is nature. And the reason is, that the one is compilation, while the other is a record of life.

Now that is the pity of it! The success of the book depended on the belief of the public that it was the product of work at first hand, and not of compilation at second—work at first hand and of the greatest naturalist in existence. Mr. Darwin (ii. 281) says himself to Mr. Huxley: "I have picked up most by reading really numberless special treatises and *all* agricultural and horticultural journals; but it is a work of long years. *The difficulty is to know what to trust.*" That really is the difficulty; and Mr. Darwin has reason in italicising it. A compilation is always a dressing of facts for a purpose; and such a state of the case is simply glaring in every turn of the *Origin*. Had it been but as *true* as the *Journal* is! Mr. Huxley himself tells us how it is with compilation in general and Mr. Darwin's compilation in particular. He is quoted (i. 347) to say—

"The great danger which besets all men of large speculative faculty, is the temptation to deal with the accepted statements of fact in natural science, as if they were not only correct, but exhaustive; as if they might be dealt with deductively, in the same way as propositions in Euclid may be dealt with. In reality, every such statement, however true it may be, is true only relatively to the means of observation and the point of view of those who have enunciated it. . . . He (Darwin) knew of his own knowledge the way in which the raw materials of physical geography, geology proper, geographical distribution, and palæontology are acquired. . . . That which he needed was a corresponding acquaintance with anatomy and development, and their relation to taxonomy. . . . I believe it would have been well worth his while to have supplemented all by a special study of embryology and physiology."

I fear Mr. Darwin will hardly come up, even as a compiler, to this standard of his own most zealous friend and staunchest champion—the friend and champion who wrote Mr. Darwin when his book came out: "As to the curs which will bark and yelp, you must recollect that some of your friends at any rate are endowed with an amount of combativeness which may stand you in good stead: I am sharpening up my claws and beak in readiness."

Mr. Huxley certainly seems (in some other remarks here) to restore to Mr. Darwin anatomy, and development, and taxonomy—and because of his practical work on and with the cirripedes; but there is no restoration to him of embryology and physiology, at the same time that one can see what a limited quarry for anatomy, and development, and classification (taxonomy), the cirripedes would be. Mr. Darwin, as has been referred to already, complains often of his hostile reviewers, that they (ii. 313) ignore everything which he has said on "Classification, Geological Succession, Homologies, Embryology, and Rudimentary Organs." It has been already explained, too, that such considerations are omitted by us also, and for the reason that they are

not peculiar to any one theory of evolution, but belong to all alike. Here, however, on the authority of Mr. Huxley, an authority that cannot well be gainsaid, we might object insufficient knowledge to Mr. Darwin on every one of the above branches except the geological. Mr. Huxley expressly names classification and embryology, and where would homologies and rudimentary organs be without anatomy, physiology, and development? Besides, we know that Mr. Huxley is far from being at one with Mr. Darwin as regards hybridity; and until the infertility of hybrids can be confuted, one of the very strongest arguments against natural selection cannot be withdrawn.

But, surely, with what is now before our eyes as regards the compilation that the *Origin* is, we cannot help specially applying to Mr. Darwin all that Mr. Huxley says about "great danger," "large speculative faculty," "temptation to deal," "truth relative to means of observation and point of view," etc. It might not be so very blameable here, indeed, to think once again of Hearne the hunter, and even to laugh once again with Mr. Darwin himself at compilers in general.

Mr. Darwin, we saw, was of opinion that his book, without Lyell's, Hooker's, Huxley's, and Carpenter's—say also Wallace's and Gray's—aid, would have been "a mere flash in the pan." When I look back on all that we have been engaged upon for some time, will it be thought very bad of me, if I confess to be almost a little tempted to share in the same conviction? Mr. Darwin is certainly right when he exclaims (ii. 302), "I owe much to my friends!" And yet not one of these friends, for all they said in his support, really understood or believed in his doctrine—absolutely! Indeed we may say it! It was not on the strength of natural selection, as natural selection, but simply on that of

evolution as evolution that they stood by him. The three nearest him in conviction were certainly Wallace, Hooker, and Huxley; but there is evidence that would justify as much as that to be said even of them.

As for Carpenter, Mr. Darwin, in his delight, just in any way, "to have got a great physiologist on our side," is quite cheerful in avowing to him (ii. 238), "I look at it as immaterial whether we go quite the same lengths;" but, for all that, when Carpenter, in his letter to the Reviewer of his *Introduction to the Study of Foraminifera* (in which it is, somewhat anti-Darwinianly, pointed out that Foraminifera, in regard to their primitive type or types, diverge as they may, "*still remain Foraminifera*"), protests against "his (the Reviewer's) foregone conclusion that I have accepted Mr. Darwin as my master, and his hypothesis as my guide," Mr. Darwin pithily observes (iii. 19), "the chief object of his letter seems to me to be to show that though he has touched pitch he is not defiled."

Disagreement on the part of Asa Gray is acknowledged by Mr. Darwin when (ii. 386) he writes him, "It is really almost a pleasure to receive stabs from so smooth, polished, and sharp a dagger as your pen;" but there are several letters (in the same neighbourhood) in proof of their essential differences especially on design.

When Mr. Wallace (iii. 46), objecting to the words natural selection, remarks, "Nature does not so much select special varieties as exterminate the most unfavourable ones," we really might quite reasonably suspect that, after all, Mr. Wallace was not, in the main consideration, at home with the principle of Mr. Darwin. With Mr. Darwin it is not a "*variety*" that is *in the first place* selected, but only a "*variation*," come how it may. Mr. Darwin does not overlook extermination, but extermina-

tion is something very secondary to him—even of small account—as compared with selected variation. This accentuation of extermination, then, on the part of Mr. Wallace, really puts him at a wide distance from Mr. Darwin. On the other hand, again, in "the beautiful self-acting adjustment" (iii. 274) between the nectary of the Angræcum and the proboscis of the Moth, he (Mr. Wallace) seems to have fallen upon, or invented, a quite entertaining child's story in illustration really of genuine Darwinian mechanism; and it is quite consistent that Mr. Darwin should expressly compliment him thereupon (p. 274). Nevertheless, it is to be said also that when (in his answer to the Duke of Argyll) Mr. Wallace refers to "*inherent powers* in the forms of life" as though it were by a development of that *inherency* that the *different species* were to be produced, then Mr. Darwin is the last man to agree with him. We are not concerned here, however, with any discussion of the views of Mr. Wallace. On the question of vital difference between the two naturalists, it is enough to point to their absolute disagreement on the origin of man. No genuine Darwinian can accept any origin for man but the common one of mundane life in general.

If Mr. Wallace was the universally reputed fellow-discoverer and peer of Mr. Darwin, there can be no doubt that Sir Joseph Hooker and Mr. Huxley were no less universally reputed to be those who, of all others, best understood and most completely adopted the principle of Mr. Darwin.

Sir Joseph Hooker is commonly thought, from the most conspicuous and responsible stations, and on the most serious and solemn occasions, as before the British Association, more than once, namely, and even as its President, to have openly proclaimed and made public profession of the truth of Darwinianism. He was then, at least to

his own belief, sufficiently a Darwinian. But that was not always so. "I see you have introduced several sentences against us Transmutationists," Mr. Darwin writes to him once (i. 355). This was in 1847. In 1853, that is six years later, he was still to convince, for Mr. Darwin at that date complains that the *New Zealand Flora* "almost made me gloomy, partly from feeling I could not answer some points." "I shall gnash my teeth," he adds, "and abuse you for having put so many hostile facts so confoundedly well." Later still, even as late as 1860, ten months after publication of the *Origin*, and Darwin's assurance, as well, to Carpenter (ii. 223), that Hooker was a "believer," Mr. Darwin complains to Asa Gray that Hooker (Lyell, too) "sometimes uses expressions to which I demur." He compliments Gray on freedom from the like demurrage at the same time that he yet somewhat contradictorily hopes (p. 345) that he (Gray) will still "go further in believing." Sir Joseph Hooker, no doubt, is of opinion that he is a philosophical naturalist in adhering to Darwinianism; but I, for my part, could wish that the son of the grand Sir William (whom, in Glasgow, I, as a lad, not yet a student, saw once—I still remember his sleeve-buckles!) was even too philosophical to believe that the whole mighty organic universe originated in the selected accidental *appositeness* of accidental *variation*. I have already intimated my respect for Mr. Huxley, as well as spoken of the two points on his part that concern Greek philosophy and Sir Charles Lyell. His chapter on the "Reception" offers to such views as mine enormous scope for adverse criticism more or less irreverent. I know not, however, that, strictly in connection, there remain more than two other points to refer to. These concern, first, what we may call popular orthodoxy, and, second, the special reason for standing by the theory of Mr. Darwin, whereby

the former point is strong enough in itself, it may be, to assume into itself the position of the latter; for it is the former point that seems alone to occupy the greater part of the chapter. This is double-edged. If you reproach me, as is the gist of the writing, with rejecting Darwinianism because of orthodoxy, may not I, with at least equal reason, reproach you with hatred of orthodoxy as your sole motive for clutching to it? If you cast up to me my fanaticism for religion, may not I cast up to you your fanaticism against it? Nay, in these days and on *this* level, can it be said that the former fanaticism is still in existence—that that horrible *odium theologicum* is at all there for your fanaticism to fling itself against?

For the last hundred years, the *Aufklärung* has been admitted as an historical fact; but, equally as historical fact, there has to be admitted now the correction of it, what we may call the *Aufklärung* No. 2. No. 1 denied the spirit because of the letter. No. 2, so far as it can, accepts the letter because of the spirit. So far as Christianity is concerned, the dictum of Mr. Gladstone is to be considered as very well in place. In a letter of his to the Rev. Alexander Webster, Aberdeen, as published in the *Scotsman*, he has these words: "As for myself, I build upon historical Christianity, the great world-fact of 1800 years." The Christian civilisation, that is, after the pagan—or, better, the classical pagan—civilisation is now the blood in our veins; and by the right of it even a so-called atheist is substantially a Christian. It is but vulgarity for any one nowadays, harking back to the *Aufklärung* No. 1, to talk, so to speak, the *shop* of it.

As regards the second point here, or the reason for Mr. Huxley's relative position, it seems to me, as said, to be simply lost in the breadth of the first; any singleness of scientific interest has betaken itself thither, and

been, it is to be feared, absorbed. Mr. Huxley, namely, was glad of anything that promised to be "a working hypothesis" towards the extinction of a supernatural causation by a natural one. "Natural causation" is the Huxleyan category. But the "finality" of the particular theory is, he says, "a matter of indifference" to him. In fact, he saw at first, and sees still, the "insecurity" of the "logical foundation" of the doctrine, so long as "selective breeding" fails to produce "varieties more or less infertile." He admits also that "in the prodigious variety and complexity of organic nature there are multitudes of phenomena which are not deducible from any generalisations we have yet reached." But the "dilemma" was "creation or nothing," and "the Darwinian hypothesis remains incomparably more probable than the creation hypothesis."

As one sees, this, as Darwinianism, is but loose Darwinianism. The principle of Darwinianism, indeed, remains so very loose with Mr. Huxley, that, even when he would lay down the actual definition of it, he writes thus carelessly—

"The suggestion that new species may result from the selective action of external conditions upon the variations from their specific type, which individuals present—and which we call 'spontaneous,' because we are ignorant of their causation—that suggestion is the central idea of the *Origin of Species*, and contains the quintessence of Darwinianism."

Mr. Darwin certainly contemplates the natural selection of a natural variation; that is his "central idea," the "quintessence" of what he has properly, specially, and peculiarly to propose. But the variation Mr. Darwin means is only the variation of individual from individual, as of the colt from the sire, the filly from the dam. "Variations from their specific type which individuals present!" why individuals, varying *from*

their specific type, no longer *of* their specific type—is there anything less here than actually a new species already to the fore? Origin of species by natural selection! why, here is the origin of species by a *flatus vocis*, the breathing of a word. Mr. Darwin's theory, in its brief two moments, was always dispatch enough; but here in Mr. Huxley's it is perfunctoriness itself! That, then, is careless writing; and it just caps and completes the quoted admissions and the quoted indifference. One cannot help the thought here of how ominous it is that such a sworn nominalist as Mr. Huxley necessarily must be, should have been so easily betrayed (by the oversight of a moment) into so palpable a realism!

Just one other remark or two in passing. Mr. Huxley will rescue Mr. Darwin from the imputation of *chance* in creation as a substitute for omnipotence; but, as I amply prove elsewhere, Mr. Darwin himself can be profusely quoted to the fact. Of course, if there is no such thing as chance, then the word itself must be cancelled. But, even *with* the mechanical necessity of Mr. Huxley's "natural causation," there is still room, I fear, for the τύχη and τὸ αὐτόματον of Aristotle. Of contingency as such, it is just possible that I have myself said enough (in the Lectures); not to mention that the general subject of *modality* is expressly discussed in modern philosophy. An "if," of course, has always the privilege of prophecy. *If* the wind blew with the absolute uniformity of so much in a second—*if* the sun shone with the absolute uniformity of so many candles—*if* the sea lay there, whether in whole or in part, in the absolute uniformity of quantity and quality—*if these data were given*, then there might indulgently be speech, even in such a case, a little on this side of absurdity; but with a wind that varies every instant from a million, and again a million, and once more a million, of utterly indefinable

causes, much the same thing, too, being capable to be said both for the sun and the sea, in such circumstances, to talk of prediction as regards this wave, or that wave, or any other wave that strikes upon the shore—ah, well! are there not bounds to the licence of oratory?

Mr. Huxley would reduce, too, the idea of creation to absurdity by challenging even such courage as was the formidable Whewell's, "to say that a *Rhinoceros tichorinus*, for instance, was produced without parents." But why not put Mr. Darwin's, or even his own, courage to precisely this proof? How about these "four or five primordial forms," or even that "single prototype"? Were they—was it, then, without parents? Or were they and it, then, just there and at the moment abstractly created? Then this astounding avowal of Mr. Huxley's!—

"The teleology which supposes that the eye was made —for enabling the animal to see—has undoubtedly received its death-blow!"

"It is the last of absurdities to believe or say that the eye has not been made to see nor the ear to hear."

As we shall see again, it is Diderot says this. I know not that there has been any High Priest of Enlightenment (*Aufklärung*) higher than he yet.

When it is said further in this chapter that "the existing world lay potentially in the cosmic vapour, and that a sufficient intelligence could, from a knowledge of the properties of the molecules of that vapour, have predicted, say the state of the fauna of Britain in 1869, with as much certainty as one can say what will happen to the vapour of the breath on a cold winter's day," one can only remark, Well, yes, *if* a sufficient intelligence, and *if* a sufficient knowledge (of *all* in infinitude), but then, also, *if* the sky falls, it will be all up with the

larks! But that is the extraordinary thing: Once any bit of metal passes with Bobus as a coin, then any script upon it, and the more inarticulate it is, can only reel in his stricken eyesight as a talisman, only all the less to be questioned, only all the more to be accepted![1]

As for Lyell, the case is complete, I think, in what has been already said. It was only in expectation, or again, most miserably in vacillation, that he was ever a Darwinian. He listened to me, says Mr. Darwin (i. 87), but he never seemed to agree. Then (ii. 371) to Professor Gray this peculiar and significant sentence so late as 11th May 1863: "You speak of Lyell as a judge; now what I complain of is that he declines to be a judge . . . I have sometimes almost wished that Lyell had pronounced against me, and when I say 'me,' I only mean *change of species by descent.*" To Mr. Darwin himself, then, Sir Charles Lyell was not, or had ceased to be, even an evolutionist. And so one cannot but think again of Aberdeen, and of the extraordinary preluding puff to Darwinianism there. Now, was that well? Was it well for Sir Charles Lyell to give the whole force of his all-powerful shoulder to what as yet was no more than a may-be to his own self? Materialism has had an enormous advance since Darwin: from him on, my brethren, the doctors, have had it all their own way, much to an improved knowledge—shall we say of skates? That may be important; but looking to the whole business concerned, can we avoid asking, Was Lyell at all warranted *by anything he knew* to take upon him the responsibility of such a questionable result as all but victory to materialism? Why, too, should he have led the public to believe that the "flood of light" thrown on this "mysterious subject" was all due to "twenty

[1] "It has some high meaning we do not understand!"—*Children of the Ghetto*, vol. iii. p. 41.

years of observation and experiments"? With all his experiences in pigeons, poultry, and seeds, Mr. Darwin supported his results mainly on a compilation. Had the public but known that! And so, then, are these letters of Mr. Darwin's to remain in proof to posterity how all-important it is, if you would gain an end, to look out for some leading authorities whom, as determinative, it will suffice to court?[1] As regards selection, scientific discovery on the part of Darwin, *there never was any.*

[1] So it was that the grandfather, "when he wanted something to be done for him," "looked out" for the right man — Josiah Wedgewood—to apply to!—I may add here, too, that much that is final in regard to contingency as against Mr. Huxley's necessity of physical atoms, will be found in the chapter on the Survival of the Fittest.

CHAPTER IV.

WHAT IN MR. DARWIN HIMSELF CONDITIONED THE WORK AND ITS SUCCESS.

So much for others. We come now to what it was in Mr. Darwin himself that led to the peculiarity of the work, its success included.

Of course, it was the hereditary bee hypothesis that gave *form* to the work itself, as it was compilation in natural history that found it in *matter*. Coming a little closer, however; we have seen that the grandfather was minded on the whole to trace all life to an original filament; and we have seen also that stir, movement before the eyes, was probably what gave the first shock of curiosity to the grandson. Suppose, then, we bring both filament and stir together in a beetle—this for the *Origin!* There are so many beetles—Hydroporus, Hydrobius, Hydrophilus—Violet Black, Large Smooth Black, Long Smooth Black,—it is quite possible that the young man, seeing so many of them, and all of them so much alike, may have asked himself some fine day, *could* each species have been separately created?—might not one species just have *varied* from another? — and in such a manner, too, that one single species was the original of the whole of them? In his own words, Have not "allied species just descended from common stocks"? And only to put it in that way, is it not at once righteously

to suggest—at least evolution, bring it about as you may?

I do not think that any one will deny, that such thought is an eminently natural one. An omnipotent God statedly employed in the sort of retail trade of manufacturing beetles is no very improving spectacle. Still, if it is to be assumed that species are derived from species, instead of being expressly created, it is just possible that the *peculiar lever* of the movement, proposed by Mr. Darwin, may not be the right one.

But of that again—what we have before us at present is Mr. Darwin's own relation to the work which he undertook. Now, if it was the love of *hypothesis* that was to preside over the work; it was, as we are inclined to fancy, Mr. Darwin's characteristic *simplicity* that set it all in movement.

In the one case, I think we may say that the tendency to even startling hypothesis is admitted in grandfather, father, and himself. "I have a fair share of invention," says Mr. Darwin more than once significantly to himself with a smile. Of course, the check of judgment is as strongly claimed as the love of hypothesis is admitted. But if we are under the dominion of hypothesis, it is at least not generally found that facts are incorruptible. Mr. Francis Darwin himself has of his father these strong words (i. 149): "It was as though he were charged with theorising power ready to flow into any channel on the slightest disturbance, so that no fact, however small, could avoid releasing a stream of theory, and thus the fact became magnified into importance. In this way it naturally happened that many untenable theories occurred to him." It would be difficult to put the case more plainly; though, of course, it is only natural for the son to add, and in a measure truly to add, "but fortunately his richness of imagination was equalled by his

power of judging and condemning the thoughts that occurred to him." In fact, Mr. Darwin himself makes a stronger acknowledgment for himself than his son does for him. Even on the last page of the *Journal* words occur which are an undeniable confession. They are these: "As the traveller stays but a short time in each place, his descriptions must generally consist of mere sketches—hence arises, *as I have found to my cost*, a constant tendency to fill up the wide gaps of knowledge, *by inaccurate and superficial hypotheses.*" He writes to Henslow once (i. 189): "As yet I have only indulged in hypotheses, but they are such powerful ones that I suppose, if they were put into action but for one day, the world would come to an end." In 1865 he acknowledges to Mr. Huxley that his "Pangenesis" is "a very rash and crude hypothesis," the result of "a passion to try to connect facts by some sort of hypothesis." For very soberest conclusion, let us bear in mind this (ii. 108): "I am a firm believer that without speculation there is no good and original observation."

So much for hypothesis, what we have named bee, and what the "candid reader" will probably find "unfair." Good heavens! I wonder where that is, whether in man or doctrine, to which at all events I would *wish* to prove unfair! Ah!—do I not know that from the moment I am, or wish to prove, unfair, from that moment I fail?

We turn to the simplicity that (with the hypothesis) set all in *movement*. The many striking instances of simplicity on the part of the boy cannot yet have escaped our memory. The tale of the hat, and the shots he was tricked out of; the collecting dead insects and fishing with dead worms; the remorse of conscience for the puppy he beat; the prayers to be enabled to run in time; the "fearful reproach" of *poco curante* that was

not "just:" all these we must still recollect, and that he believed that he was "in many ways a naughty boy." It must still be quite within our recollection, too, that the simple conscience of the boy followed him into manhood. He, late in life even, cannot sleep till he gets up and adds an *important* rider to some trifle he had said! "The surprise and delight with which he hears of his collections and observations being of some use: it seems only to have gradually occurred to him that he would ever be more than a collector of specimens and facts, of which the great men were to make use." The extravagance of his praise: "I never in my life read so lucid an expositor (and therefore thinker) as you are"—"every one with eyes to see or ears to hear ought to bow their knee to you, and I for one do"—so and so "the clearest-headed man whom I have ever known, a wonderful observer, to my judgment I have come across no one like him, his powers of observation I have never seen exceeded or even equalled." It is almost too bad to say so, and may seem mere profanation of the most affectionate and reverential feelings between father and son; but the most perfect proof of the simplicity of Mr. Darwin lies in his relation to his father. "Miss——, a grand old lady in Shropshire, was telling everybody that she would call and tell that fat old doctor very plainly what she thought of him." This fat old doctor, whom "facts in conversation" alone interested, who was a "great talker," who was a "great collector of anecdotes," "who knew an extraordinary number of curious stories," who was always joking and in high spirits, and who told stories and anecdotes "in conversation with a succession of people during the whole day," —this fat old country doctor and gossip was to Charles Darwin "the best judge of character he ever met," "the most acute observer he ever saw," "the wisest man he ever knew;" "he could read the characters, and even the

thoughts of those whom he saw even for a short time;" "he received many strange confessions of misery and guilt;" "my father," says Charles, "told me the story many years after the event, and I asked him how he distinguished the true from the false self-accusations, and it was very characteristic of my father that he said he could not explain how it was." It was very characteristic of Mr. Buckle, too, that when asked how he could judge his facts, "he answered that he did not know, but that a sort of instinct guided him"!

If it was hypothesis that dreamed his scheme, and simplicity that led him ardently to work on it, it was *tenacity* that realised it. But there was another little peculiarity that combined itself with his tenacity to effect on his side the success which we have already seen as influenced by others.

This was a certain natural wiliness, a certain natural slyness. I am afraid I shall find some difficulty in procuring the acceptance of this by others. At first sight, at least, it seems utterly at variance with all our psychology of Mr. Darwin as yet. Can truth be wily, the most perfect openness and honour sly? How is it possible that any wiliness, slyness should at all comport even with the simplicity which has been but now represented to constitute a very fibre of the man? Suppose we look back to the boy, however, perhaps we may find in *him* a ground of support.

In the autobiographical chapter (i. 28) we have this—

"I told another little boy that I could produce variously coloured polyanthuses and primroses by watering them with certain coloured fluids, which was, of course, a monstrous fable, and had never been tried by me. I may here also confess that as a little boy I was much given to inventing deliberate falsehoods, and this was always done for the sake of causing excitement. For instance, I once gathered much valuable fruit from my father's trees and hid it in the shrubbery, and then ran, in breathless haste, to spread the news that I had discovered a hoard of stolen fruit."

Now there is no intention of making more of this than it is worth; there cannot be a wish to make an odious Jean Jacques Rousseau of Charles Darwin. All that we hold it to be good for is to suggest that there was a strand of a certain slyness—harmless if you like, innocent if you like, amiable if you like—but still that there was such strand in "the original filament" of the namer of that filament's own grandson. When he refers to the results of "fundamental organic conditions," we might almost find a warrant for as much as that in old Erasmus himself. Nay, might not Dr. Krause claim Erasmian heredity for this avowal of Mr. Darwin's own (ii. 142): "I must entirely agree with you that all expression has some biological meaning"?

It is as an element contributed by himself to his own success that we at all name the strand in question here. Now this element of success, if it is one, may be said to have had a threefold bearing: First, as concerns his work itself; second, his enemies; and, third, his friends.

1. There is a certain sagacity in Mr. Darwin which, if it was not present in the beginning of his book, is at least to be seen with some complacency in the end of it. We have (i. 87) for instance this—

"The success of the *Origin* may, I think, be attributed in large part to my having long before written two condensed sketches, and to my having finally abstracted a much larger manuscript, which was itself an abstract. By this means I was enabled to select the more striking facts and conclusions" ("he took much trouble," says his son (i. 156), "over points which would strike the reader," and (p. 119) "he was careful to tell me to make an important clause begin so as to catch the eye").

It is really not inconsistent with this that he is still aware (i. 85) "how necessary it is that any new view should be explained *at considerable length* in order to

arouse public attention." It is quite clear to him that he who fails to impress his readers, *should* fail; while he "who succeeds in doing so deserves," he says, "in my opinion, all the credit." It was "a golden rule" with him, he tells his children (i. 87), if any contrariety offered itself to make a note of it at once: So, he goes on, "very few objections were raised against my views which I had not *at least noticed and attempted to answer.*"

These last words suggest what a "wriggle" is. At any time that something might be said in objection to him, Mr. Darwin would at least notice and attempt to answer it: Even in that, so far, is there not something of the burthen of Mr. Darwin's own term "wriggle"? What wriggling is will appear from the following. Mr. Darwin (iii. 309) asks Dr. Asa Gray to tell him, "Does *S. perfoliata* close its flower like *S. speculum*, with angular inward folds?" for, "If so," he adds in the alarm of compromise, "I am smashed without some fearful wriggling." Again, when H. W. Bates seems to refer to some fact apparently adverse to some certain tenet of his, Mr. Darwin (ii. 361) writes to his friend Hooker, "How well he (Bates) argues, and with what crushing force, against the glacial doctrine. I cannot wriggle out of it: I am dumbfounded, yet I cannot give up equatorial cooling." It would appear thus that it is only with a laugh at his own expense that Mr. Darwin finds himself in a corner to wriggle; and certainly the whole matter is not worth more than a laugh. Another pleasant reflection of the same shift occurs in a word or two that concern Mr. Herbert Spencer, whom, of all men, as a philosopher, Mr. Darwin, probably, respects the most. In a letter to Sir Joseph Hooker (iii. 55), he comically avows: "I feel rather mean when I read him (Spencer). I could bear and rather enjoy

feeling that he was twice as ingenious and clever as myself; but when I feel that he is about a dozen times my superior, even in the master art of wriggling, I feel aggrieved." To compilation under hypothesis, wriggling, of what small account soever, is evidently a necessity. That Mr. Darwin could wriggle, or propose to wriggle, or even laugh at the proposition to wriggle, has at least some assonance to the Carlo-Darwinian strand in question: it may be allowed at least to strike some slight vibration into the filament of wile.

I have referred elsewhere to accentuation on the part of Mr. Darwin—"in his usual colouring way." Thus Mr. Darwin, as, to our knowledge, he can readily resolve into a very flood of praise, so he is apt, even generally it may be, to rise into the excess of an enhancing phrase. He says once (i. 82), as we have seen, for example, "It was evident that such facts—*as well as many others*—could only be explained on the supposition that species gradually become modified;" and on the opposite page this: "I happened to read for amusement *Malthus on Population*, and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants," etc. Of course, there can be no difficulty of wriggling out of the supposed colouring in either of these cases. Mr. Darwin undoubtedly *had* other facts; but, in the circumstances,—the facts of suggestion being apparently complete, and these "many others" quite unnamed,—does not the phrase just seem to slip in by ear on the trick of custom? Nor, in the other case, does the fact of Mr. Darwin's long-continued observation cause the stop of a moment. Only, it is not so certain but that *all* that is here in reference, is to be attributed to this same reading of Malthus. As we shall presently see, the struggle for existence is not a doctrine of the

Journal, whether as propounded in it or to be proved from it; and the *Journal* may stand for all that Mr. Darwin held *before* the *Origin*. Then, does not Mr. Darwin repeatedly rest his case, as to his friend Jenyns (ii. 34), on this foundation: "A long searching amongst agricultural and horticultural books and people makes me believe that I see the way in which new varieties become exquisitely adapted," etc.? Adaptation, as we know, Mr. Darwin mainly refers to selection through struggle: there is not a word here, then, of the alleged long-continued observation; all is referred to the information of others. In fact, it is a little to be suspected that on the suggestion of the struggle, the suggestion of the long observation simply followed. Both, that is, and pretty well at one and the same moment, were suggested by the single reading of Malthus. Expedients of literature were after all not so alien to Mr. Darwin; one of which is the trick of verbal enhancement and plausible accommodation. See how he puts in the *Origin* (p. 237) the question of *Sterility*, for example. Of course, it would considerably block the way to natural selection if the sterility of hybrids should be pronounced absolute. So it is to the interest of Mr. Darwin to discredit it. The truth, however, probably is that sterility is the rule, while the other alternative can only be supported, in "the usual colouring way," on the discrepancies of authorities who altercate with each other about doubtful exceptions. What concerns Mr. Lewes, too, goes in the same direction. It is quite certain that this author *can* be so quoted as though he praised Dr. Erasmus; but it is equally certain that in the book the whole figure of the poet or philosopher is a somewhat shabby one. Mr. Darwin *could* bring himself to take into view from Lewes only what suited him (see the Krause-book).

Mr. Darwin is never at a loss for what conjectural

ingenuity any cross may invite: he can parry in *carte*, and equally in *tierce*. As he says himself, he could have written "a more damning review" of his own book "than has yet appeared." The wily ingenuity of the arch little rogue that painted the polyanthuses and feigned the stolen fruit has not died out in the man; neither, respectively, has the motive. What the boy did "was always done for the sake of causing excitement;" and Mr. Darwin had, in the success of his very peculiar doctrine, always something like excitement in his eye. If what was said of it by others first stirred the waters; still it was in what these others *had* to say of it that the reason lay. As we have seen, Mr. Darwin again and again puts force on what agriculturally, horticulturally, and how not, he had learned from others; and Sir Charles Lyell had no business to ascribe all this, important as it is, to twenty years of original research. Still it was in that special important outcome, come as it may, that the focus of the excitement that was to be lay. That creation had nothing whatever to do with the life of a single being on the earth, animal or plant, and that some years earlier, we ourselves—men themselves—demonstrably had been co-descendants of or with monkeys! Can we wonder that such extraordinary (so-called) discoveries as these, authenticated by the most authoritative judges then existent, an Alfred Russell Wallace, a Dr. Asa Gray, a William Benjamin Carpenter, C.B., M.D., LL.D., F.R.S., F.L.S., F.G.S., a Sir Joseph Hooker, a Sir Charles Lyell, a Huxley — discoveries bearing, moreover, in a manner the most crucially and cruelly critical, on the nearest, the dearest, the most vital and essential interests of mankind, both here and hereafter—can we wonder, I say, that such discoveries, so situated, and so authenticated, were received with just one rush, respectively, of astonishment, — of gratification, — of abomination, — on

the part of the great majority of men who deal in print. The arch little rogue that was present in the man had it now in his power to glut himself at will on excitement at last; and so far as there is excitement in ambition, it is to be said that the love of excitement remained with the man himself. He claims for himself (i. 103) a pure love for natural science, but adds, "This pure love has, however, been much aided by the ambition to be esteemed by my fellow naturalists." "I was also ambitious," he confesses elsewhere (i. 65), "to take a fair place among scientific men." On receiving a letter to the effect that this consummation was to be his, "I clambered over the mountains with a bounding step," he cries (i. 66), "and made the volcanic rocks resound with my geological hammer—so ambitious I was." One can see the pride, too, with which he tells his children at full of the success of his books. There is confession in this (i. 393): "I am glad you have shown a little bit of ambition about your Journal, for you must know that I have often abused you for not caring more about fame, though, at the same time, I must confess, I have envied and honoured you for being so free of this 'last infirmity of, etc.'" And a still stronger avowal is this (i. 94): "I wish I could set less value on the bauble fame, either present or posthumous, than I do." Again, when he says (i. 102), in reference to the success of works abroad as constituting a standard of fame, "Judged by this standard, my name ought to last for a few years," one may be apt to feel that there is a longing of the soul here only all the deeper for the suppression in the expression. At the same time it is just in this suppression of expression that one can understand into what a man the arch little rogue grew—grew into a new excitement that was itself grown—grown from the excitement of wile into the intoxication of science and scientific renown.

2. But we are concerned with the wile here only so far as it relates to success; and we turn, secondly, now to its bearing, in the same reference, on enemies, or on those at least who were, in some way, or to some extent, apparently opposed to him.

It is in regard to what is here concerned, any element adverse, that the so bepraised candour comes in. Now, it is to be understood that, with whatever is to be said, Mr. Darwin's candour is never for a moment in doubt. May we not justifiably attempt, however, to read at times between the lines even in this candour? So to look between the lines is to see certainly the candour, but, surely, not also without a tinge at times of the wile. See, for instance, his replies as a whole to those correspondents who rather differ from him as to conditions. He is always, so far, candid in these; but is there not also the wile of as much, or even more—agreement than he has it at bottom to give? Of course, it is here that the courtesy comes in; but his courtesy itself is not unsmoothed by the wile. As much wiliness as is supposed, indeed, could only give the last touch to his courtesy—nay, perhaps, it is pretty well exclusively in regard to the courtesy that there can be any question at all of the wiliness. The good effect of the courtesy, for example, is no more hid from the wiliness, it may be, than the persuasion is clear to it of a little judicious expression to foes. "Sleek Benjamin"[1] disarmed his adversary by begging the loan of the rare book he had. Mr. Darwin, however, if a little sly as a gentleman might be, never condescended to be sleek. He is scarcely more than kindhearted when (ii. 92) he finds his friend Hooker "a little too hard on bad observers." "An observer who deserves to be damned," he objects to him,

[1] "Our Deane, our Franklin—Sleek Silas, sleek Benjamin."—Carlyle.

"you would utterly damn." He himself speaks well of his reviewers (i. 89): "they have treated him almost always honestly." And yet he adds, "my views have been often grossly misrepresented, bitterly opposed and ridiculed, but this has been generally done," he meekly doubts not, "in good faith." All other authors, his son says (i. 157), were spoken of by him "as persons deserving of respect. In cases where he thought lightly of the author, he speaks of him in such a way that no one would suspect it. In other cases he treats the confused writings of ignorant persons as though the fault lay with himself for not appreciating or understanding them." Yet, "he had the keenest of instincts as to whether a man was trustworthy or not." Of course, it is the courtesy, the acquired societary tone, that obtains in such controlled expression. Mr. Darwin exhibited ever in the end an absolute power of moderation, a perfect mastery of "inhibition." Nevertheless, in the various elements that went to this, the contributions of the arch little rogue that watered the primrose is not wholly to be left out of count. It was very fair of Mr. Darwin, in his "Historical Sketch," that is preface to the *Origin*, to give the names of actually some two dozen individuals who precede himself in the discovery of *natural selection;* but is not the prestige of positive establishment almost won for the doctrine so? and inasmuch as Mr. Darwin *is*, are not the whole twenty-four of them *not?*

3. As to friends, the letters of Mr. Darwin, for many years, and to many correspondents, are a general proof here. They concern his single theory, the most of them, and for that theory, as the immediate correspondent is, it is impossible to imagine anything more coaxing. We have seen enough in that kind already as in reference to Lyell, Hooker, and the rest; but, by way of reminder, we may just quote here, how he says to Hooker once (ii. 31): "I

have never perceived but one fault in you, and that you have grievously, viz. modesty; you form an exception to Sydney Smith's aphorism, that merit and modesty have no other connection, except in their first letter! "Few things," he says (p. 334) to Lyell, "have surprised me more than the entire paucity of objections and difficulties new to me in the published reviews: *your remarks are of a different stamp and new to me:* I will run through them and make a few pleadings such as occur to me." But that already is only a poor ingratiation compared with the veritable seduction of just a year earlier on the eve of the publication of the *Origin*—"As you go as far as you do, I begin strongly to think, judging from myself, that you will go much further: *how slowly the older geologists admitted your grand views on existing geological causes of change!*" If the compliment to Hooker is a little what even a German would call *plump*, surely there is an insinuating fineness in that to Lyell which must have proved irresistible!

In short, how else than with a little slyness explain all that somewhat barefaced soft-sawder on the part of such a man as Darwin? Must there not have remained in him, though altogether *unbefangen*, that same strand of wiliness which he himself declares to have existed in the boy? Generally, have we not now seen enough in confirmation of the entire position which this chapter as a whole is there to make good?

As necessary preliminaries, we pass now to consideration of what are in reference here as the *Struggle for Existence* and the *Survival of the Fittest.*

CHAPTER V.

THE STRUGGLE FOR EXISTENCE.

Is it a fact that, in a state of nature, there is a struggle for existence on the part of living organisms generally?

Just on the spur of the moment, when we hear this question, we are apt to answer, Most assuredly there is. For lions and tigers, sharks and sword-fish, hawks and vultures, spiders, ants, and ichneumonidæ rush at once into our thoughts, and we quote to ourselves—

> "Of nature red in tooth and claw,
> With ravine."

But the question is, With all that carnivorousness in beast and bird, in fish and insect, does not the balance of life remain pretty well the same?

Certainly the beds of the earth are but the graves of the extinct—whole genera have perished. That, however, may be, at least partly, due to catastrophes. Catastrophes do periodically occur, and with enormous sacrifice of life. There are deluges and there are droughts, there are ardours and there are rigours; and deluge or drought, ardour or rigour, the one or the other may be the premiss of a quite overwhelming slaughter. Nevertheless, ever again, from the miserablest remains—somehow—is not the loss repaired and the balance made good—on the whole? On the whole only it must be,

seeing the vastness of what is extinct; which, however, may have other causes than even the droughts, deluges, ardours, rigours. Mr. Darwin himself at least seems to postulate such. He cannot imagine (*Journal*, p. 174) any possible catastrophe short of one that shook "the entire framework of the globe," destroying "about the same time the inhabitants of tropical, temperate, and arctic latitudes on both sides of it." Of course, it is not well possible to think of a struggle for existence in such a case as that. To suppose that it was just in mutual grips that all these animals choked the breath out of each other would involve curious results. In some cases, as we have seen, there are still living representatives of such extinct animals, and if it is to victory in battle that we are to attribute preservation, then the dwarfs, not seldom, must have got the better of the giants! It is the *fossil* kangaroos are gigantically the biggest; and six-inch armadillos replace their greatly more than six-foot predecessors of centuries ago in the Pampas.

As regards the general fact of extinction, it is true that there is no necessity of appeal to either resource. Disappearance beneath the moon entails not an exclusive reference to either battle or catastrophe. Sooner or later, everything that is perishes. Pterodactyles, Ichthyosauria, Plesiosauria, Macrauchenia, and all the rest of them, did not at least *need* to go in any other way than naturally so. Nor is it different with mankind. Savages we see that seem to creep in just at the touch of civilisation. But is it necessary? What of the Negro? what of the Chinaman? what of the Jap? Nay, *let* the dwindling in question really result from some necessity in nature, what justification is there for the naming of that necessity struggle?

But, all that apart, what is the evidence of actual fact

in the question? What is the testimony of every shipman who has ever landed on a previously unknown shore? "Their tameness is shocking to me!" That in effect is the exclamation of every one of them in regard to the animals they see. Mr. Darwin himself, in his *Journal*, p. 400, quotes reports on the part of the earlier visitors to such islands as the Falklands, Bourbon, Tristan d'Acunha, where what creatures they find are always "so tame as to suffer themselves to be caught."[1] It is impossible to think of struggle and strife in such circumstances. Nay, the same tameness prevails in such places even when there are "rapacious animals" present, such as "foxes, hawks, and owls," and when battle to some extent must be: battle—but not possibly, as is plain at a glance, butchery. Nor is this state of the case confined to islands. Dr. Andrew Smith is quoted (p. 86) to have seen in one day's South African march rhinoceroses, giraffes, hippopotamuses, crocodiles, antelopes, lions, panthers, hyænas. Giraffes and antelopes could not very well defend themselves from the attacks of these latter carnivora, nevertheless there were "several herds" of them. Mr. F. C. Selous, "the celebrated African hunter," according to the *Scotsman* (December 19, 1892) gives similar testimony: he "said it (the Fly District) was one enormous game preserve, swarming with buffalo, burchell zebras, and many species of antelope; lions were also very plentiful." Plentiful lion was not incompatible with still more plentiful antelope. For that is remarkable, the different sides on which the more plentiful and the less plentiful fall How many the tame compared with the wild—how few the fierce compared with the gentle, the carnivorous with the herbivorous! Will the struggle for life explain that? If the fierce destroy the gentle, the carnivora the herbi-

[1] Dr. Erasmus gives us the same testimony from Professor Gmelin and M. Bougainville (*Zo.* i. 158).

vora, how is it that any of the latter are left? Is not that what you mean by the struggle—that this conquers that?—the strong the weak, etc? In the course of a struggle, is it really the weak that you would expect to prevail? In a state of nature it is *that* that again and again surprises—the abundance of the food. We shall presently find Mr. Darwin himself to remark upon it. Even in the very lowest strata, the "confervæ and animalcula" that feed swarm, countlessly swarm; nor in the ascent of the scale does the relative proportion in essentials cease. Take the *passenger pigeon* of North America, for example; "it breeds in such immense numbers as to darken the air for a considerable period when the flock takes to flight." Cooper, in one of his novels, gives a most vivid description of these immense numbers. "The air is filled with them, rising layer over layer, in one solid blue mass that the eye cannot see the end of." As possible *raptores* for these—man apart—we can find Cooper to talk, in the same neighbourhood, only of two eagles. With nature so prolific of life, what call is there for a struggle? what need?

Mr. Warburton Pike, in his *The Barren Ground of Northern Canada*, gives a striking picture of the numbers as well as tameness of the animals that migrate southwards before the approaching cold. All the south side of Mackay Lake, which is a hundred miles long, was alive, he says, "with moving beasts, while the ice seemed to be dotted all over with black islands, and still away on the northern shore, with the aid of glasses, we could see them coming like regiments on the march;" "they were very tame, and on several occasions I found myself right in the middle of a band." We may append the same moral to the great variety of birds which Dr. Macgregor describes as following the steamship on his voyage to Australia.

Mark Twain, in his *Innocents at Home*, assures us of the peaceful life of a most incongruous happy family in the South Seas: "Schools of whales grew so tame that day after day they played about the ship among the porpoises and the sharks without the least apparent fear of us, and we pelted them with empty bottles." Of course we are never quite sure, though he seems serious here, that Mr. Mark is not at his fun as usual. Here is a picture from Bret Harte, however, which, though also in a work of fiction, must still be regarded as founding in fact: "It was very quiet and kam; there was squirrels over the roof, yellow-jackets and bees dronin' away, and kinder sleeping-like all round in the air, and jay-birds twitterin' in the shingles, and they never minded me." Mr. Hiram M'Kinstry was surprised into this look at nature; and we too, of a summer day, may allow ourselves to look and see some such scene for ourselves. M. Jules Verne, as we know, deals in fiction that can only be called altogether enormous; nevertheless, as we know also, the data by which he gives consistence to his fiction, are usually even mathematically true; we may, on the whole, rely on this picture of his: "Grazed herds of red antelopes, zebras, and buffaloes—a white rhinoceros crossed the open—an onager was braying, and a troop of monkeys were chasing each other among the trees—it was not so much the number, as the wonderful variety of the animals that surprised—it seemed like a diagram in which the painter had depicted each principal type of the animal kingdom—all that, in the virgin country where the wild beast was still the undisputed master of the soil, lived on in happiness, without a suspicion of danger."

There is an article in the July number of *Temple Bar* for 1889 descriptive of the immense variety of birds that may come to a pond to drink: chaffinches, flycatchers, jackdaws, starlings, titmice, nuthatches, redstarts, thrushes,

goldcrests, robins, sparrows, wagtails, sedgewarblers, larks, blackbirds, wood-pigeons, night-jars, ringdoves, woodwrens, woodpeckers, linnets, blackcaps, whitethroats, jays, yellow hammers. "What chiefly struck one in watching the birds at the pond," says the writer of the article, "was the vast power of enjoyment these creatures possessed; every quiver of the tiny wing assured one of this, and every stray note that burst forth from the tiny throat like the 'overflowing of brimful joy.'" Nay, it seems that these tiny creatures can not only enjoy but even play—just like children, actually play! "In reference to the idea that set games are played by animals, the writer may mention a curious incident, witnessed by the late Andrew Crosse at his residence on the Quantock Hills. Looking one day from his laboratory window into a courtyard that was remote from any disturbance, he there saw a robin, dragging the apparently dead body of another robin, round and round in a circle, on the paved court. After continuing this strange proceeding several times, the mimic Achilles, with the corpse of the feathered Hector at his heels, stopped suddenly in his circuit round the fancied walls of Troy, and as suddenly threw himself on his back, as if stark dead, with half-distended wings, and rigid, upturned legs. Meanwhile the other robin, the seeming victim of a cruel triumph, woke up to full life, and seizing upon his companion, dragged him, in his turn, repeatedly round and round the mystic circle. The game ended, and both birds flew off together to the neighbouring trees."

In the same article (*Temple Bar* for December 1891, p. 479), we have this droll account in reference to "Otter Slides."

"These slides were as smooth and slippery as glass, caused by the otters sliding on them in play in the following manner:—Several of these amusing creatures

combine to select a suitable spot. Then each in succession lying flat on his belly, from the top of the bank, slides swiftly down over the snow and plunges into the water. The others follow while he crawls up the bank at some distance, and running round to the sliding place, takes his turn again to perform the same evolution as before. The wet running from their bodies freezes on the surface of the slide, and so the snow becomes a smooth gutter of ice. This sport the old trapper had frequently seen continued with the utmost eagerness and with every demonstration of delight, for hours together."

And it is not always all play, or all enjoyment, on the part of the lower animals; on the contrary, there is frequently actual business conjoined, as the Notes of a Naturalist interestingly instruct us (see the *Cornhill* for February 1889, pp. 178–9).

"He (the jackdaw) flies about with the rooks and feeds with them . . . it is most amusing to see the busy, methodical way in which he sets to work to rid an animal (a sheep) of its insect tormentors. All over its back and sides he hops and clings, the sheep standing quiet all the time, and knowing perfectly well that what the bird is doing is for its benefit.—One will frequently see horned cattle, sheep, and horses feeding on the same land, and four birds busy feeding in their midst—rooks, jackdaws, starlings, and wagtails, to give the alarm on the approach of any object." I daresay there may be those who will point to signs of battle here; but, surely, what would frighten the cattle would only be a man or a dog, while as for actual hostilities again, they are confined to the insects! Of course, such quotations as the above might be indefinitely increased. No doubt they are absolutely opposed to this internecine struggle for life, which is intimated to us. No doubt also they will illustrate the industry that is named of compilation!

That all that—of the Descent of Man, say—should be supported, not on thirty years' actual observation, experiment, and insight—personally—of the greatest naturalist in existence, but only on little more than so many years' clippings and cuttings from articles in periodicals and other such, as—about "Hearne the Hunter"!

We, however, if our respective position, so far, seem only weak, have it immediately in our power to render it at once impregnable by a reference to—Mr. Darwin himself. It is perfectly within the limits of truth to say that his entire *Journal* disproves the struggle!

Mr. Darwin is no sooner at sea than he is amazed at the illimitable profusion of life there—of life, to say so, in its first rudimentary or mere food-state, as in confervæ and infusoria. The ship passes through great bands of animalcules infinite in number, and again through strips that are "whale-food" and consist of innumerable "prawn-like crabs," on which feed "terns, cormorants, and immense herds of great unwieldy seals." He is at a loss to imagine where the birthplace can be of these "millions of millions of animalcula and confervæ." "Whence come the germs?" he cries in astonishment.

But his surprise is not one whit less, as to innumerableness, even when the larger lives are anywhere in regard. Swarming, extremely abundant, immense flocks, countless herds, vast numbers, thousands, myriads, millions, millions of millions—predicates such as these are to be found *passim* in his book; and they are applied to an astonishing variety of living organisms:—flies, fireflies, butterflies, cicadæ, crickets, spiders, beetles, ants, lizards, glowworms, toads, frogs, rats, mice, foxes, waterhogs, antelopes, deer, jaguars, pumas, guanacos, porpoises, seals, sea-otters, penguins, gannets, frigate-birds, terns, boobies, noddies, guinea fowl, egrets, cranes, ostriches, partridges, tucutucos, cuckoos, vultures, bienteveos, mocking-birds,

carrion hawks, buzzards, condors, petrels, parrots. "If we look to the waters of the sea, the number of organic beings is indeed infinite." "How surprising it is that any creatures (worms) should be able to exist in brine, and that they should be found crawling among crystals of sulphate of soda and lime!" On these worms, flamingoes "in considerable numbers" feed, as the worms themselves "on infusoria or confervæ." "Well may we affirm, that every part of the world is habitable! Whether lakes of brine, or those subterranean ones hidden beneath volcanic mountains—warm mineral springs—the wide expanse and depths of the ocean—the upper regions of the atmosphere, and even the surface of perpetual snow—all support organic beings." All that relates to "the grand scheme, common to the present and past ages, on which organised beings have been created." And in such a presence, "it is not possible to give an adequate idea of the higher feelings of wonder, astonishment, and devotion which fill and elevate the mind."[1]

So far, we have, on the part of Mr. Darwin, one sole reference to life—life infinite in its numbers, infinite in its varieties; and there is not as yet a note, a hint, a whisper, of those mortal straits in bitter struggle from whose fatal pressure only the fittest emerge. No doubt there is strife—life in some only through death in others. But yet scarlet—blood—cannot be called the colour of the scene. There is infinitely more of a smile in it than of a shriek. What is savage is in its paucity out of all proportion to what is tame.

But Mr. Darwin, too, gives his authority to the positive pleasures of existence, to the actual joys of nature. Even vultures, which are gluttons of flesh the greediest, have, Mr. Darwin (p. 59) assures us, "pleasure *in Society*." "On a fine day a flock may often be observed at a great

[1] *Journal*, pp. 67, 94, 26.

height, each bird wheeling round and round without closing its wings, in the most graceful evolutions—clearly performed for the mere pleasure of the exercise." Condors, he says again (p. 183), "may oftentimes be seen at a great height, soaring over a certain spot in the most graceful circles; on some occasions I am sure that they do this only for pleasure." This, too, is strikingly in point (p. 199): "One day I observed a cormorant playing with a fish which it had caught: eight times successively the bird let its prey go, then dived after it, and although in deep water, brought it each time to the surface" (what indolent repletion, what lazy satiety!)

Mr. Darwin (pp. 217 and 162) draws attention to the albatross. Once he says, "The storm raged with its full fury, but, whilst the ship laboured heavily, the albatross glided with its expanded wings right up the wind;" and again: "It has always been a mystery to me on what the albatross, which lives far from the shore, can subsist. I presume that it is able to fast long." The chionis alba is another bird spoken of (p. 94) by Mr. Darwin, which, too, seems capable of being content with short commons at times; for, although "it feeds on seaweed and shells on the tidal rocks, yet, from some unaccountable habit, it is frequently met with far out at sea." There is little sign of a struggle for life in such cases. These animals have evidently no need to struggle: they seem indifferent about their food, and can remove themselves carelessly from any supplies of it.

But, as we have seen sport, play—positively as of children before the door—in the animal creation, on the authority of others, so we have no less such sport and play on the authority of Mr. Darwin. The bizcacha, he tells us, picks up miscellaneous articles it finds lying on the ground and groups them around the mouth of its burrow. So, "a gentleman, when he was riding on a dark

night, dropped his watch." It gave him no concern; he was sure a bizcacha would find it for him in the morning, as actually happened! "The only fact which I know analogous," says Mr. Darwin (p. 125), "is the habit of the Australian Calodera maculata, which makes an elegant vaulted passage of twigs for playing in, collecting near the spot shells, bones, and the feathers of birds: the natives, when they lose any hard object, search the playing passages, and even a tobacco pipe has been known to be thus recovered." Drawings of this bower-bird, there called the Chlamydera maculata, "with bower," are to be seen at p. 382 of the *Descent of Man*, where the details of the description are at much greater length. Mr. Darwin's remarks, partly seen already, in regard to extinction (p. 175), may be put as a general conclusion on this whole side of the subject:—

"We do not steadily bear in mind, how profoundly ignorant we are of the conditions of existence of every animal; nor do we always remember that some check is constantly preventing the too rapid increase of every organised being left in a state of nature. The supply of food, on an average, remains constant. We are unable to tell the precise nature of the check. If, then, the too rapid increase of every species, even the most favoured, is steadily checked, as we must admit, though how and when it is hard to say—and if we see, though unable to assign the precise reason, one species abundant and another closely allied species rare in the same district—to admit all this, and yet to call in some extraordinary agent and to marvel greatly when a species ceases to exist, appears to me much the same as to admit that sickness in the individual is the prelude to death—to feel no surprise at sickness—but when the sick man dies, to wonder, and to believe that he died through violence."

The supply of food Mr. Darwin admits to remain constant; and its stomach being full, it is not easy to suppose much fight in an animal. "If asked how this is" (*i.e.* referring to what has been just quoted), "one immediately replies that it is determined by some slight difference in climate, food, or the number of the enemies: yet how rarely, if ever, we can point out the precise cause and manner of action of the check." Mr. Darwin here pretty well slumps up the struggle with the conditions which are always as good as inexistent for him; nor anywhere else that I know of does it (the struggle) ever reappear in the *Journal* less faint or less casual—if indeed ever at all. That it was no more than an afterthought only following the reading of Malthus *will* force itself in! The most convincing chapter of the *Journal*, however, is that which concerns the Galapagos (see my last Gifford Lecture, in which they are discussed at full).

Krause's book, as we have seen, is luminous in a quite multiple Darwinian endorsement. Now no man is more minded than Krause to take the general truth for granted of a balance of life being made good in nature. It is as in reference to this that he says, "Moreover, plants are able to protect themselves from complete destruction." If plants, if animals, then surely men! Yet it was the struggle of men—their competition at least—that, in Malthus, suggested to Darwin the whole business. And how does Goethe view it? Why thus:—He "has observed that, in whatever situation of life we are placed, and wherever we fall, we never want actual food." That means, that however galling the straits of life may be, there is no struggle such that, failing to triumph, we must perish in defeat.

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CHAPTER VI.

THE SURVIVAL OF THE FITTEST.

As regards our other consideration at present, it is pretty evident that if struggle there is none, survival, in that it simply means result of foregone contest, can be, and must be, so far, only a dead letter. Nay, in fact between the two ideas, supposing each to be accepted, there is a direct and point-blank antagonism. The one is pessimistic, and points only to the existence of evil, strife; while the other is optimistic, and proclaims the triumph of the good. *Detur digniori!* If here below it is always the fittest survives, then the problem of problems is solved, the question of questions is answered: This world, even as it is, *is* a providential world. There is a good God over it; absolute justice reigns; it is the *fittest* is rewarded! Where, then, the litany of woes for which another world is to bestow the recompense?

But, just squarely to say it, the proposition itself, survival of the fittest, is, as things are, preposterousness proper. It is simply absurdity's self—the absolutely false. The fact—and we have abundantly seen it—the fact that contingency reigns, that *the* category of the external cosmos is contingency—that fact, singly and solely, is the all-sufficient proof, the inexorable demonstration. *I returned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the*

wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to them all. That is the true picture of the contingency of all things. Nor is it confined to the world of man. Fish of the sea and bird of the air, beast of the bush and herb of the field—all of them are alike exposed. Nay, contingency is not the lot of the animate alone, there is not one particle of the inanimate that escapes. Comets may glow and meteors may stream; but they glow and they stream in contingency. The tides are minuted; but they will not be so minuted for ever, and meantime there is not a tide that rises but rises in contingency. No wind that blows, but blows in contingency. No sun that shines, but shines in contingency. Nor is it otherwise with the fountain that bubbles, or the stream that flows, or the rain that falls. Fountain, stream, rain, are all at the will of contingency. No, you say; all is of necessity; and of necessity so that all will come again,—all will but repeat itself. There is such iron necessity in the very heart of the atoms, *which alone are*, that an Earthquake of Lisbon, a Vespers of Sicily, a Black Hole of Calcutta, an Alexander, a Cæsar, a Mahomet, a smoke of Trafalgar, a cannonade of Sebastopol—will all recur again. But no; that is not so: nothing that ever was will ever more return. Not a day, an hour, a minute, that ever throughout this great universe lived, can ever anew live the life it lived, brief but most real. Time recrudesces never, nor space, nor aught that is in either. Physical necessity! Yes; but it is even because of this physical necessity that all is physically contingent. Ay, that alone, contingency alone, is the iron master to which we have all to submit. Not one of us but is just *waiting* here—absolutely impotent before whatever contingency may doom. Man! boast not thyself of to-morrow; for thou knowest not what a day may bring forth. That from

physical necessity, you say again. Yes, from physical necessity as parent source and first, originating force, but physical necessity *at play—with* the infinitude of *matter*, in the infinitude of *space*, throughout the infinitude of *time*. Infinite streams, whose infinite lines infinitely *cross*, calculable therefore only of the Infinite! Calculable at all, then—Reason *qua* Reason being as it is? Are there not *Veritates æternæ*—the *Atoms* of Reason—the very atoms of the Infinite itself—and indestructible so? Of these, is not contingency one?

Survival of the Fittest! Of two lions that fight, *must* the strongest win? How about a thorn, or a stone, or an unlucky miss, and an unfortunate grapple, and a fatal strain—to say nothing of infinite contingencies of rest and fatigue, of sleep, and food, and health, that precede? Train two men alike that are already alike in height, and weight, and measurable force, and—

> "Doubtful it stood;
> As two spent swimmers, that do cling together,
> And choke their art"—

will the result of a trial of naked strength between them be always calculably so? Or will incalculable contingency intervene, and assure the victory to one of them, that is indifferently either? It is Cæsar who says (*B. G.* vii. 85) that in battle "exiguum loci ad declivitatem fastigium habet magnum momentum," which means that the advantage of the ground is determinative; and we may say it for lions and boxers as well as for armies. We have in Homer (*Il.* vi. 339), *νίκη δ' ἐπαμείβεται ἄνδρας*, for victory alternates to men. But it is Thucydides that shuts up in a single word, *παράλογον*, the whole matter of contingency in this element. In fact, the *παράλογον πολέμου* of Thucydides is "the chance of war" which was as well known to Napoleon

and to Wellington as to every other warrior that ever fought.

Physical necessity and physical contingency, at once law and lawlessness—nay lawlessness *from* law; for the streams, lines, are law, while the crossings, the touchings together (contingencies), are lawlessness. That is the fate, the doom of externality as externality. With an in and in of internality as internality, there may be the necessity of reason; but with an out and out boundlessly —difference out and out boundlessly, of externality as externality, *self*-externality, externality *to* self, there *must* be the necessity of unreason. There is still, doubtless, the externality of law—physical force gives that—So to speak, there is the face of law, but contingency is ever at work marring it. Were not contingency as a stage for free-will, how could free-will be?

In the first half of this century there were the best—the best that have ever been—almost in all things—in war, and politics, in poetry, criticism, fiction, philosophy, but now? We are "a feeble and a puny folk." Hemisphere east or hemisphere west, the latter half of the nineteenth century will be known, it may be, with all its exceptions, as probably the feeblest half century in the whole of history.

It is fitting that at such a time the brocard that rules should be the Survival of the Fittest; for it is not easy to imagine a more meaningless scroll to march under. The proposition, as we have seen in fact, is wholly false as it stands. That is, it is not a truth, or a certainty, or a necessity that the Fittest survives, or should survive, unless—the proposition be true when converted *simpliciter* thus: Who survives is fittest. If that be a *just definition* in the case, then the terms are *exactly equivalent* and may be *converted simpliciter*. But is that an apodictic proposition, That a survivor, just by surviving, demonstrates

himself fittest to survive? Now that is what we have before us. There is no truth in the proposition, The Fittest are the Survivors, unless it be absolutely true also that the Survivors are the Fittest. If those who do survive are, simply by surviving, the fittest to survive, then the survival of the fittest is an established fact, but not unless! Unless survival be the very definition of the fittest, survival of the fittest is as idle, empty, and, at the same time, mischievous a cry as Plundering and Blundering, or Masses and Classes, or any other such cries in favour with, and characteristic of, this poverty-stricken generation.

Or, to take it in yet another way:—"The Survival of the Fittest:" What does that mean? what is it that is meant by the Fittest? is it that what is meant by the Fittest is the Fittest to Survive? Why, then, in one way, the survival of the fittest can only concern a question in medicine. What can enable an animal body —a man, say—to be the fittest to survive? Plainly that, born with every organ in the perfection proper to it, he (the man) is maintained ever afterwards in the full enjoyment of every due condition. Barring contingency, *then* this fittest to survive really—it may be granted—*would* survive. Are we to understand, then, that fittest means no more than that? The survival of the fittest, means simply the fittest to survive? Or, if not the fittest to survive, then the fittest to—do what? The fittest to weigh heavy? How about his cracking the ice, sinking in the marsh, or upsetting the row-boat? Is it to be tallest is to be fittest? Then how about the bunks, etc., on board ship? In short, to be tall or short, to be light or heavy, to be small or large, to be strong or weak, to be clever or unclever, to be brave or cowardly, is—so far as survival is concerned—a question that varies with a thousand circumstances, a question that is

absolutely relative. According to "the haughty Persian" in Gibbon (c. 65), "even the *casses*, the smallest of fish, find their place in the ocean."

The fittest to survive is he who has varied to advantage in the struggle for life; for, of course, he who has varied to disadvantage must simply go to the wall. But is there any stop, then, in this rise to advantage? Nay, rather, how can any one see a stop? By the very terms of the doctrine any end to the process does not for a moment appear. But if there be no limit to the propagation of the beneficiaries of an advantage, what, simply of necessity, *must* be the result? Is it possible in such a struggle—a struggle that just constitutes existence—is it possible in such a struggle for even a single competitor to survive him who is the fittest to survive? If individual with individual, species with species, genus with genus, must struggle, how is it that the infinitude of time has not already reduced all life to a single unit? Ah, but—as we have seen indeed—the race is not to the swift; it is from a novelist that I again borrow a truth: "I shall come back—if I am alive. How you say that: you are as strong as I.—Stronger, perhaps. But then—who knows? The weak ones sometimes last the longest." The soft pod of the pea is quite as happy with its seed as the hard stone of the cherry. When we sneeze we draw our breath through our nostrils: if this were not so, to sneeze when we have food in our mouths would be to die. Is it the variation to, and the propagation of, advantage that has killed off every man and woman, and the children of every man and woman, that sneezed through their mouths when they ate?

And then against the ordinary moralisation of existence, is it possible to support the survival of the fittest? Thus Napier of Merchiston, in reference to the patronage

of James VI., remarks on "works worthy of memory which, lacking some mighty Mæcenas to encourage them, might perchance be buried with eternal silence." For no one can tell how many a soul sublime has felt the influence of malignant star and dropped into the grave unpitied and unknown. As the loveliest flower may be born to blush unseen, so may their lot doom to nothingness many a soul quite as great as a Hampden, a Milton, or a Cromwell. It is not necessary that the fittest *should* survive. Survival of the fittest is a brocard false. Who shall say that alone the seed was good that fell on the good ground, and alone the bad that fell on the bad? Endless night lies on those that want the poet.

"Paulum sepultæ distat inertiæ
Celata virtus." [1]

[1] That from M. Jules Verne (p. 209) ought to have been followed by a passage from Mr. R. M. Ballantyne, who (*The Dog Crusoe*, p. 261) writes thus: "Animal life swarmed on hill and dale. Woods and valleys, plains and ravines teemed with it." Then he names, as in "profusion" together, "red deer in herds, beavers, otters, racoons, the martin, the black fox, and the wolf, sheep, goats, badgers, wild-horses, elks, bears, black, brown, and grizzly." The whole passage is a very strong one, and from a man who had really seen the Rocky Mountains and the valleys in them.

CHAPTER VII.

DETERMINATION OF WHAT THE DARWINIAN THEORY *IS*.

If we are to venture to attempt to refute the theory of Mr. Darwin, it stands to reason that we must first know what that theory is. Is the theory known—truly *known?* that, naturally, a reader first asks. There have been, of course, already many indications in this regard; but what is now concerned is, once for all, a formal precise statement; and that statement must accurately express what Mr. Darwin means by natural selection.

Now it must have been observed that Mr. Darwin—nay, even Sir Charles Lyell—always brackets the term selection with the term variation, and both terms again are qualified by natural. Natural variation, and natural selection, in some way, name the two moments, the consecutive and correlative moments, which are together constitutive of what peculiar process for the production of species is under their inscription figured or feigned.

As regards the first moment, the variation, it is but a general fact, and assumed to be granted. All organisms vary. Whether in man, or beast, or plant, the progeny varies from the parent. But what becomes of the variation? It is with this question that Mr. Darwin opens his enterprise. The variation, he says, is not idly overlooked by nature, but is taken advantage of, and

turned to a new account. This is an action on the part of nature, and it is evidently selection. Nature selects a variation, and turns it to her own service. It is this selection that is the secret of the general idea. The variation is but Nature's opportunity: how she lays hands on it, that is the *punctum vitale* of the whole business. It may be that nature will not step in on the first, or the second, or any assignable, variation. Nevertheless, it cannot but be that every variation will tend to alter the bearing of an organism to existence—will tend to realise itself as the first step to a *new mutual relation*. A variation is but a new cue, a new sign to nature to come hither and catch on.

But all here is natural—the whole process is natural. The variation is natural, and the turning of it to use is natural. Generally, it comes to this, then:—In the infinitude of time, variations will, in organism after organism, eventually arise such as necessarily involve the taking on of a new relation with nature, or with some one, or some several, of the factors of its habitat and environment in nature. But new relations are new powers: and organisms with new powers are new species. Infinite time means infinite variations. Infinite variations mean infinite new relations. Infinite new relations mean infinite new species.

Mr. Darwin's own words are required to substantiate these statements; and none such can more authoritatively or explicitly be found than in the passages (*Life and Letters*, i. 82–84, and ii. 120–125) which are, respectively, Mr. Darwin's own account of the whole matter to his children, and the writing to Asa Gray, chosen by Mr. Darwin himself, to be laid before the Linnean Society as representative of his views, on the occasion of the reference to Mr. Wallace. These will be taken up point by point in the sequel; and in

the meantime for the purpose in hand less will suffice.

What started the whole relative thought in Mr. Darwin is directly ascribed in the first of these statements to his experiences in the *Beagle:* it was "during the voyage of the *Beagle* that he had been deeply impressed," etc. Mr. Francis Darwin, however, makes (i. 276) the following extract from his father's pocket-book of the date 1837: "In July opened first note-book on Transmutations of Species. Had been greatly struck from about the month of previous March on character of South American fossils, and species on Galapagos Archipelago. These facts (especially latter), origin of all my views." Now it was in September 1833, and two years later (September 1835) that Mr. Darwin respectively visited South America and the Galapagos Archipelago. Yet here, in London, in July 1837, it is only since the previous March that he has come to think—that he "has been greatly struck"—"on character of South American fossils, and species on Galapagos Archipelago." The discrepancy is glaring; but it is quite possible that, though the voyage furnished the materials, and even suggested some early thoughts, it was only at the later dates that these thoughts fairly formulated themselves. Nevertheless, the *Journal* gives little or no evidence of such direction to his thoughts either in place or time: I am greatly moved to refer to the line at the beginning of Chapter IV. "Suppose, then, we bring both filament and stir together in a beetle—this for the *Origin!*" There can be no doubt that Mr. Darwin had seriously studied, and seriously taken to heart, the "programme" which, according to Dr. Krause, lay ready for him in the works of his grandfather; and there can be as little doubt that the affinities among all these species of beetles which he

knew so well, must have been obvious to him. Therefore it is that I bring both considerations together in connection with the *Origin*.

But however that may be, it is the momenta of the resultant theory which are specially our quest at present. For these, directing attention to the whole of each of the passages named, we select, as sufficiently explicit and decisive, the following expressions: Certain resemblances having suggested to him "that species gradually become modified," the subject "haunted" him. "Adaptations"—as, "for instance, of a woodpecker or a tree-frog to climb trees, or of a seed for dispersal by hooks or plumes"—had always "much struck" him; and their explanation he saw must be a necessary element in any theory that had modification for its principle. Man, by breeding, artificially produced adaptations; and the secret of his success was "selection." But natural selection could only naturally take place, and that was—by "the struggle for existence." It could be only so that "favourable variations would tend to be preserved, and unfavourable ones to be destroyed." "Here, then," says Mr. Darwin, "I had at last got a theory by which to work." In the struggle for existence, the unfavourable variation would die out; but the favourable one would survive: "the result would be the formation of a new species." This is eminently simple; and one cannot help thinking at once, There can be no difficulty in submitting each sub-idea of the common idea to the test of proof. Nor did the additional sub-idea of "divergence," subsequently suggested, really lead to a complication of any consequence. Divergence meant that variations, or the subjects modified by them, *naturally* betook themselves to "places" that were *naturally* adapted to them. The same stock might, as modified, yield horses for the plough, horses for the road, and horses for the race-course, etc.

The simplicity of Mr. Darwin will be apparent in all this—the ease with which he gives himself up to an idea. He saw analogous animals, as it were, replacing each other in space and in time; and so he thought they might be all due the one to the other. He tells his children this quite frankly; and that he could not proceed with his idea till he was able to explain adaptations. What a joy it was to him, he tells them also, the thought of the selective action of the struggle for existence, and again the further thought of the natural selective action, in divergence. It is in this last consideration, divergence, that most innocently, perhaps, his simplicity shows.

It was in "July 1837" that Mr. Darwin began what he calls his "systematic inquiry;" and it was fifteen months afterwards, "in October 1838," that he "had at last got a theory by which to work." "In June 1842," he wrote an abstract of his theory; and this abstract he enlarged "in the summer of 1844." "But at that time," he says, "I overlooked one problem of great importance; and it is astonishing to me, except on the principle of Columbus and his egg, how I could have overlooked it and its solution. . . . I can remember the very spot in the road, whilst in my carriage, when to my joy the solution occurred to me; and this was long after I had come to Down." Now the coming to Down was on "September 14, 1842." A comparison of these dates will show that the express theory of natural selection, complete, so far, in 1838, remained long after 1842 secluded to "favourable variations" and "the struggle for existence." "Divergence" was the discovery of the "long after"—"the tendency in organic beings descended from the same stock to diverge in character as they become modified," or the tendency on the part of "the modified offspring of all dominant and increasing forms to become adapted to many and highly diversified

places in the economy of nature." It is of this principle of divergence that Mr. Francis Darwin (ii. 15) feels himself called upon to make some explanation. "In reading the sketch of 1844," he says he had found it "difficult to recognise as a flaw" what was so designated by his father: "descent with modification implies divergence, and we become so habituated to a belief in descent, and therefore in divergence, that we do not notice the absence of proof that divergence is in itself an advantage; as shown in the Autobiography, my father in 1876 found it hardly credible that he should have overlooked the problem and its solution." The point concerned is understood in a moment by reference to the stock of horses which splits up into plough horses, race-horses, etc. Individuals of the same stock, that is, precisely as they vary, are variously applied, or they come to occupy "diversified places in the polity of nature." This is further illustrated by the superior yield of the same plot of ground if sown, not with "a single variety of wheat," but with "a mixture of varieties." "The same spot will support more life if occupied by very diverse forms," says Mr. Darwin himself (ii. 124). Now, in such illustrations, the "superior yield," the "more life," the "increase in numbers," the "greater produce," the "more individuals," etc., are almost so exclusively thrust into view that the gist of the illustration is lost; which gist solely concerns the *difference* of the *places* seized by the *differences* of the *individuals* seizing them. In that, and in that alone, lies the principle of the divergence of character. Mr. Darwin's favourableness of variation, and Mr. Darwin's principle of divergence, mean no more, *each*, than the single expression *new relation to nature*. The favourableness of the variation depends on a new relation to nature, and it is just in such new relation that the divergence of character lies. Why, even with the plot and the grain, how is it that the mixed seeds have a

greater increase than the unmixed? The former, plainly, have a greater variety of differences than the latter, with which to meet the differences of the plot. The *differences* of the plot are so many eyes for the hooks which are the differences of the seeds; and in these differences the mixed exceed the unmixed. Difference here to difference there: the result is a relation, or, as it may be, a new relation. Mr. Darwin's own word for relation is, as we have seen, simply "place." Variations to him, as variations, become relegated to new "places." One is apt to feel a little surprise, then, on the whole, that so much should have been made of so much that is in itself so easy. The new that has given so much joy to Mr. Darwin as over a quite extraordinary *find*, is, after all, nothing but the old. The splitting up of the stock of horses is nothing but an illustration of the variation in its effects. The splitting up is but of variations into new "places" adapted to them. The divergence is no more than an illustration of the modification.

The whole thing is a striking illustration of Mr. Darwin's state of mind when absorbed in the idea of a projection. So vaguely he presses on, that even essential distinctions escape him. The single point of modification has so caught that all-too susceptible imagination of his, that he has simply given himself up to it—in a certain confused heat he sees nothing else. The struggle will select, the stock will split up, the variety will take its place —all with nature as with us. He so glows himself that he makes all others glow. He persuades Lyell, Hooker, Huxley, Gray to astound the public with the tidings of a discovery that opens a new world to it. It was really as though Columbus had come home with the unimaginable fruits and flowers of an unimaginable new country. "I cannot doubt," cries Mr. Darwin, "that during millions of generations individuals of a species will be born with some

slight variation profitable to some part of its economy; such will have a better chance of surviving, propagating this variation, which again will be slowly increased by the accumulative action of natural selection; and the variety thus formed will either coexist with, or more commonly will exterminate its parent form: an organic being like the woodpecker, or the misletoe, may thus come to be adapted to a score of contingencies." What is this but imagination reduplicated, and reduplicated into an absolutely *nth* power, till no one can resist it, especially those who, like Mr. Huxley, would smash to the earth that stupid pulpit-business with the metalline dash of "natural causation"?

From what precedes, we see that variations, diverging into new "places," become, by natural *selection*, new species. It may be well to illustrate from Mr. Darwin himself this process of selection. "The very term *selection*," he says once to Hooker (ii. 317), "implies something, *i.e.* variation or difference, to be selected;" and at another time (ii. 373) he lays stress to Asa Gray on "the enormous field of variability which he sees ready for selection to appropriate." But, perhaps, a single consideration, and of two illustrations, the one by Mr. Darwin and the other by Mr. Francis, will give sight—final and definitive—of the whole theory. Mr. Darwin (ii. 320) makes variations the materials for the formation of a species, just as bricks or squared stones are the materials for the formation of a building. As the peculiarity of the materials, too, influence the building, so does that of the variations influence the species. "Yet in the same manner as the architect is the *all*-important person in a building, so is selection with organic bodies." That, then, is plain; as the architect makes a new building out of stones, so selection makes a new species out of variations. To Mr. Francis again (i. 309, note): As the builder forms

stones into a house, so the breeder forms variations into a race. In both illustrations, the *rôle* of selection, as the *rôle* of variation, is accurately prescinded.

But what now of the *adaptation?* Why, that, too, is easy—that, too, is on the surface. The *favourableness* of the variation in the struggle for existence and the divergence into *place* simply *are* the adaptation. As an organism varies ever the more and the more favourably, and diverges ever the more and the more in character and place; so, plainly, ever the more and the more must it depart from what it was at first, to stand up, sooner or later, consequently, with new adaptations, a new species. In this way new species and new adaptations are seen to be but products of natural growth, and not by any means results of supernatural interference. Just consider, for example, how such a conspicuous case of adaptation may have gradually arisen—naturally—as the woodpecker (again and again referred to, this is Mr. Darwin's favourite example of adaptation).

Of two birds that feed on insects, conceive the one of them to have varied favourably in the beak—to be possessed, that is, of the stronger beak: it will have the advantage over the other, and it will transmit this advantage to its descendants. In these this advantage can only grow; for they will always possess, and, as is evident, always increasingly possess, the strongest beaks. That strength of beak will give the advantage is but a corollary on the habits of the birds themselves. They haunt fallen trees, namely, under the bark of which the insects burrow to fall a prey preferably to the strongest beak that can dig for them. Still even the strongest beak does not always succeed; its tongue, conceivably, is too short, and the insects occasionally escape it. Let a strong-beaked bird be born now with a longer tongue than the rest, why, it, too, will have the advantage over

its fellows, and it will also transmit this advantage to the descendants of itself. Strong-beaked, long-tongued insect-feeders will now, evidently, constitute the rule; but unfortunately, in course of time, there occurs a dearth of fallen timber; strength of beak and length of tongue scarcely suffice any longer for more than the scantiest and miserablest of existences. But see, one of them gets born with sharper fore-claws than any one of its brothers; it is actually seen to ascend standing trees, and, triumphantly tapping the bark, luxuriously to feed on an all-abundant treasure and store of hitherto unreachable and unreached insects. Once again there can be only one result, the birds that have blunt fore-claws will gradually die off, and the sharp fore-claws will alone remain. But even these come to be at a disadvantage in the struggle for life. An individual is born that adds on to the already existent sharp fore-claw—actually!—a sharp hind-claw. *Consummatum est!* the sharp fore-claws must perish, for their time has come. But even the triumphant hind-clawers have to suffer defeat in their turn. There is born among them one who can stick his tail, as well as his claws, into the tree, up which he can run with an all-conquering swiftness. He and his children simply starve out all the rest, and are left alone at the last in the undisturbed possession of every rotten tree in the forest. On every one of them now there thrones as autocrat—*a Picus Superbus!*[1]

This, the woodpecker, is a bird that, for the complicated adaptations it exhibits, is absolutely unparalleled. The bill is wedge-shaped and keen; the tongue long, nimble, sharp, barbed or beset with bristles bent backwards, and coated viscid; the claws are strong and spiked to grasp even a perpendicular surface, and in this they are supported by the tail, the stiff, pointed end-

[1] Of course this conceivable story is not to be laid to Darwin.

feathers of which can keenly grasp also. The life of this bird being the running up and down old trees to pick holes into them in pursuit of insects, which it hunts and captures with its supple, long, gluey tongue, it is to be regarded in itself as glaringly and conspicuously a proof of the fact of natural selection; for though possibly quite an ordinary bird at first, it has conceivably grown into what it is—a new species—by propagated successive advantages simply in pursuit of its business.

Mr. Darwin's own words will confirm the picture. "The facts which kept me longest scientifically orthodox," he says (ii. 121), "are those of adaptation—the woodpecker, with its feet and tail, beak and tongue, to climb the tree and secure insects," etc. This is as much as to say that he was long arrested by the problem of design—and we may now take together all that concerns that problem in a chapter by itself.

CHAPTER VIII.

DESIGN.

WHAT Mr. Darwin tells his children about adaptation he had already told Asa Gray: "To talk of climate or Lamarckian habit producing such adaptations as in the woodpecker, with its feet and tail, beak and tongue, to climb the tree and secure insects, is futile." And then he adds, "This difficulty I believe I have surmounted." Mr. Darwin believes, that is, that his theory of natural selection accounts for design. He is very strong in his rejection of "the action of surrounding conditions" in regard to adaptations. In that, he has plainly before his mind the stress which is laid by other naturalists on such external influences as climate, cold and heat, soil, etc.

We know, for example, that herds of horses that have remained close to alluvial regions usually consist of individuals of a large size, owing, as it is said, to "the rankness of their food;" and this applies to the large horses of the English middle counties. These are sprung indeed from horses Flemish and Dutch, already large; but still they have had the further advantage of the "lowland rich alluvial pastures of the plains." So, also, it is said that "climate and peculiar feeding" have, in domesticating the ox, actually reduced his bulk and diminished his very bones; while the same causes have been seen very specially to act in a similar way on

sheep. Sheep, it is true, can exist in almost every country; still it is equally true that "climate and soil fix limits." "The climate and the condition of existence which it induces, affect, with irresistible force, the structure, health, and reproductiveness of men and animals from the equator to the pole."

Now, such views as these cannot but have been perfectly familiar to Mr. Darwin. Nay, are not the principles they concern to be included among the most salient expedients and resources of the very breeders to whose operations he makes such signal reference in support of his own? The strange thing, then, is that he came, as it were, to dislike conditions, and even almost to grudge them any part whatever in the business proper of his enterprise. We must consider, however, that so far as conditions were conceived to be active in the production of adaptations, it was not for him to admit them against, in the same reference, a theory of his own. Not that he could admit them, in that special reference, as he seems to say, even on general grounds. To talk of climate or Lamarck in the same breath with adaptations was to him futile; or again (ii. 29), "That climate, food, etc., should make a Pediculus formed to climb hair, or woodpecker to climb trees," was "an absurd notion." Still he might have admitted the influence of conditions in the production of changed forms even as his favourite breeders did. That he did not do so will be found to prove itself in the *Life and Letters* even scores of times—as will be matter of express reference further on. It may be, as we say, that it was in the interest of his own theory that he was averse to conditions: he would not have them diminish *its* glory, he says once to Hooker (ii. 390). In fact, it was to the provisions of his own theory that he attributed the production of the appearance of design: "An organic

being like the woodpecker may *thus* become adapted to a score of contingencies." That italicised *thus* must be understood to concern the explanations to his children and to Asa Gray in regard to adaptation and design. These explanations amount to this :

Accidental change in an organism develops a new relation to nature, and the realisation of the relation gives the appearance of design. But from first to last in the process—really—design there is none. We have here, all through, in an *organic* reference, what we have everywhere else in an *inorganic*—results of *natural law*, simply and alone. As, supernatural interference, there is none required ; so, supernatural interference, there is none bestowed. The most remarkable adaptations for special purposes that can be seen in nature are perhaps those between flowers and the insects which fertilise them ; but there is not one single special adaptation even there that is not the natural result of natural selection. There is, in a certain way, design of course,—glaring design,—but the whole of it is only *ex post facto*. Change of species is due to no mechanism whatever but the development of a new relation between nature and an individual organism, in consequence of one or more of those variations of chance and accident which are unaccountably always taking place, spontaneously as it were, in every living tissue, let it be existent anywhere. That relation, dependent on natural change completely accidental, may be distinctively named the *Darwinian Relation*. The seizing of a new place was the form in which what we name *Relation*, this new relation, occurred to Mr. Darwin ; and this new relation being the simple consequent, was *ex post facto* design. The new relation, though quite an agreement of accident, really consisted of two terms in mutual *rapport*. Now it was *rapport* that alone suggested design—that alone *was* design : and

here was *rapport* that was nothing but the effect of accident. An accidental variation accidentally corresponded to a factor of nature accidentally present, and a *rapport*, a relation, a coincidence, that *looked like* intentional concert, that looked like *design*, was the result. Mr. Darwin could no sooner have become aware of such a peculiarity as this, than it must have at once suggested itself to him that what was organic really occupied after all only the same level as what was inorganic. Physical mechanism, natural mechanism, was alone existent in the universe. Whether, otherwise, his religious views had been of themselves coming, for an indefinite time back, to no very different result, is not a consideration for us here: it is enough that from the instant his own *Darwinian Relation* became plain to him, he gradually ceased, as it is said, *to believe*.

From previous expressions in this writing, the reader will, pretty well, have perceived that it (the writing) is no issue from the society *de propaganda fide*: these are not days in which it will occur to any true man to reflect with censure on his neighbour's religion. Any religious reference in Mr. Darwin's regard must be understood to concern only what bears on design; and it is only as so bearing that we shall make now certain quotations. There has been evidence already that what Mr. Darwin conceived to be the only opposite or alternative to his own doctrine was creation. Expressions to that effect, for example, we have already seen in passages of letters that concerned Lyell. "Creation *or* Modification" (ii. 371): that was the flag he definitively nailed to his mast. Mr. Darwin vacillated at times externally; but not for long, I honestly believe, did he ever in any serious respect vacillate internally after maturation of his ideas. Expressions of such vacillation occur, for instance (see Gifford Lectures), in regard to his views on conditions:

but they are as nothing beside their contraries, and are rather to be considered as but outcome of courtesy for the moment. So in the present connection when, in reply to the Duke of Argyll's remark on the evident expression of mind in his own illustrations from nature, Mr. Darwin admitted that "that often came over him with overwhelming force, but that, at other times, it seemed to go away," we are to see only a check of the moment to his veritable resolution and belief. In several expressions to Asa Gray also in mitigation of his own views of design, we cannot doubt that we have before us only the reluctance of such a genuine nature as Darwin's to cause his correspondent pain. He "grieves," he says (ii. 353), that he "cannot go as far as Dr. Gray about Design;" but at another time he writes (p. 373), "Your question, What would convince me of Design, is a poser: If I saw an angel come down to teach us good, and I was convinced from others seeing him that I was not mad, I should believe in design." On yet another occasion he again tells Dr. Gray (p. 373) that he has been "thinking more on this subject of late," but "grieves" to say that he comes to "differ more" from him. Within a year of his death Mr. Darwin will be found (i. 315) writing to W. Graham, "There are some points in your book which I cannot digest: the chief one is that the existence of so-called natural laws implies purpose: I cannot see this." This is not to be mistaken; and, again, there can be no more express statement than (p. 309) this other: "The old argument from design in Nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered—there seems to be no more design in the variability of organic beings, and in the action of natural selection, than in the course which the wind blows."

We must credit Mr. Darwin with understanding at

least his own self. If he says he rejects, in consequence of his own doctrine of natural selection, all that has been understood, and is understood, as design, then it is not for any other man to say the contrary. In fact, it is impossible for any man who reads these three volumes of the *Life and Letters*, not to see that it was the one special pride of Mr. Darwin to think that he had brought the organic world to the same level as the inorganic world—" now that the law of natural selection has been discovered ! " This, too, is equally the pride of many of his followers : natural selection has brought all to the single uniformity of natural (that is, physical) law, materialism.

Now, I have no wish whatever to present the consequences of a doctrine as refutation of that doctrine—if otherwise validly established as a doctrine. Though it is so in mathematics that the *reductio ad absurdum* is accomplished, " imputed consequences " have not always any such consummation elsewhere. What alone I regard here is truth and fact. Still, just in this name—in the name of truth and fact, it is a right that what doctrine is now before us should be understood, not only in itself, but in all that pertains to it. Now the end of the doctrine of natural selection—the end of the thought of Mr. Darwin is only this—matter and natural (mechanical) law in matter. Beyond that Mr. Darwin cannot go. " It is mere rubbish," he says (iii. 18), " thinking at present of the origin of life ; one might as well think of the origin of matter ; " " and as to the origin of matter (p. 236), I have never troubled myself about such insoluble questions." It is just possible that what is insoluble here, may not be so insoluble elsewhere. But that does not concern us at present. What we would point out now rather is this—that what is implied as an objection to the theory of Mr. Darwin, does not necessarily on that account in the

same way lie against all other, so-called, evolutionary doctrines. Philosophy itself must be allowed to amount at last to no more than, in a certain way, an evolutionary doctrine.

In 1859, it appears that the Rev. Charles Kingsley was one of those favoured jurymen to whom Mr. Darwin sent his new book. One of Mr. Kingsley's paragraphs in thanks runs thus: "I have gradually learnt to see that it is just as noble a conception of Deity, to believe that He created primal forms capable of self-development into all forms needful *pro tempore* and *pro loco*, as to believe that He required a fresh act of intervention to supply the *lacunas* which He Himself had made. I question whether the former may not be the loftier thought." This view of Mr. Kingsley's in fact falls under the general statement in Hume to which, as I refer (*Lectures*, p. 272),[1] Erasmus Darwin *assented*, but from which it proved convenient for the moment to David himself, elsewhere in his own writing, to seem to *dissent*, namely, that it argues "more wisdom in the Deity" to contrive a creation on general principles from the first, and "more power" to delegate authority to these principles, "than to operate everything by His own immediate volition." Kant's celebrated Theory of the Heavens, in which he is supposed to have anticipated both Herschel and Laplace in regard to what is called the nebular hypothesis, has much of these same ideas; and as in Hume and the others, so in him, it all comes to the single thought that the antedating of the Divine interference neither removes nor lessens it. Now, as it is simply in the light and heat of that thought that Mr. Kingsley, further, exultingly exclaims, "Darwin is conquering everywhere, and rushing in like a flood, by the mere force of truth and fact," so it is pretty well with the same preparation of

[1] Above at p. 54 also.

mind that I *oppose* what Mr. Kingsley *supports*. "Let God be true, and every man a liar!" That is what Kingsley says in support of what the doctrine is to him, namely: and that is what I say in opposition to it. "Let us know what *is*," he says again, "and, as old Socrates has it, ἕπεσθαι τῷ λόγῳ." That, too, I say, and perhaps with a far other intensity of conviction. But in truth the λόγος, the reasoning, that Kingsley believes himself to follow, is not at all Darwin's λόγος, Darwin's reasoning. Primal forms created, capable of self-development into all other forms, that is "the noble conception of Deity," "the loftier thought" that is Charles Kingsley's; but it is neither the conception nor the thought of Charles Darwin. The whole infinite life around us, of plants, and animals, and man, whether in sea, or earth, or air, is but the product of so much physical necessity, mere mechanical arrangement on mere mechanical chance. All follows in this world, even for life, even for thought, just as the wind that blows. There is natural law, physical law; and Mr. Darwin would know no other. The origin of matter is insoluble; but there it is, and it has fallen of itself, mechanically, into globes, on which globes there has come to be much mechanical evolution, both animate and inanimate, but all of it, always, and in all respects, physical. Charles Kingsley postulates a Deity—postulates an evolution, certainly to him, as it were "clothed in white samite, mystic, wonderful;" but what in either respect does Charles Darwin not find himself *cease* to postulate? Charles Darwin is emphatically good; and it becomes very evident that he is not always and with all men at ease in the unbelief which he feels forced to. Sympathy is a need of Mr. Darwin's own very nature; and hence, in his own goodness and courtesy, he cannot help passages in his writing that would bespeak, now and then, the appearance of

vacillation; but Charles Darwin—really—as little vacillates—internally, that is—here as anywhere else in what concerns his theory. On the contrary, he is true to his conviction always; and ever, from stage to stage, it only grows. He says once, for example, as we saw (ii. 373), "I have been led to think more on this subject (design), and grieve to say that I come to differ more from you." With all his courtesy and gentleness, Darwin was singularly simple, singularly honest, and singularly brave. He could not be happy if he thought any one made a mistake of his opinions, and all the less if these opinions were attributed to his supposed credit. He must speak; silence was impossible to him. "I had no intention to write atheistically," he says once to Asa Gray; "but I own that I cannot see as plainly as others do, and as I should wish to do, evidence of design and beneficence on all sides of us." "It is not that designed variation," he continues, "makes, as it seems to me, my deity 'Natural Selection' superfluous, but—from seeing what an enormous field of undesigned variability"—and that undesigned variability means to Mr. Darwin only accident and chance—"there is ready for natural selection to appropriate." That is not the Deity of Charles Kingsley who created primal forms with laws of innate self-development. Mr. Darwin will have no such innate and internal law; he will only have an adventitious and external law. On his system (ii. 176), "only diversified variability" is required, but not any "aboriginal" "power" or "principle." In the *Origin*, too, there is this strong statement: "The mere lapse of time by itself does nothing, either for or against natural selection: I state this because it has been *erroneously* asserted that the element of time has been assumed by me to play an all-important part in modifying species, *as if all the forms of life were necessarily undergoing change through some innate law.*" Innate

law, aboriginal principle, Mr. Darwin will have none such: he will have only a casual variation in an organism, which, casually somehow also, is found to involve connection with nature in an additional relation.

Now, as we see, such an evolutionist as Charles Kingsley has not the remotest dream of all this. He believes in an original creation in the beginning and at the first, to the simple evolution of which we owe the innumerable species that now are. These, then, were not separately created, but merely evolved. And as Charles Kingsley was, it cannot be doubted that many evolutionists still are. They have no suspicion that if they are Darwinians their creed otherwise must simply be, and cannot but be, as Mr. Darwin's own. Mr. Darwin's own! And that means that Mr. Darwin was proud to think that, even as Sir Isaac Newton had reduced to a single everyday natural necessity the whole infinitude of the inanimate, so he, Charles Darwin, had similarly reduced to a single everyday natural contingency the whole infinitude of the animate itself. To Newton there might be an innate law in the things themselves, and to Newton there might be a God who created the things themselves. But to Darwin neither the one nor the other was a need. It may be right to say "*law* of natural selection;" if a constantly recurring fact may be *called* a law—the fact of limitless natural variation, only, no less limitlessly, naturally applied. Still it is the "undesigned," spontaneous, unaccountable, mere mechanical consecution that constitutes the fact, while it is the constancy of the process that makes the law. And so it is that Mr. Darwin has no need even of the innate law of Newton; while as for a God, the God of Newton, the God of Design, we have already seen that Mr. Darwin almost directly says instead (ii. 373), "my deity Natural Selection."

Now this was not so to any one of the other evolutionists whom we have already seen named. That was not so to Charles Kingsley. He believed in a majestic *in*volution at the will of God, which, necessarily of design, was followed in turn by a no less majestic *e*volution at the will of God. Nay, is there not reason to surmise that this may be the position of the greater number of evolutionists, even of those that believe themselves Darwinians? Mr. Darwin, in the Historical Sketch that begins the *Origin*, refers to no less than twenty-eight names of naturalists whom it is understood that we shall assume to be less or more in sympathy with himself. The *less or more* is a less or more, however, of a very considerable latitude. Buffon may have been—less or more—inclined to mere nature both for Design and Divinity; but what of his (Darwin's) own grandfather—what of Geoffrey Saint Hilaire, Wells, Herbert, Chambers, V. Baer, Owen—what of these, not to name the others, though I fancy even of them, even of the whole list, as regards Design and Deity, one or other, or both, we may with perfect security put the same question. Why, Mr. Darwin seeks to claim Aristotle as all for necessity—him who was the deepest and most comprehensive thinker that ever lived—and he, Aristotle, was the purest theist of the whole of Pagandom, while of him, Aristotle, Design was absolutely *the* principle!

But there were evolutionists, even before Lamarck, even before Dr. Erasmus Darwin. There was the celebrated Newtonian, Maupertius, 1697–1759: transmutation by breeding or even selection may be read into his "Venus Physique:" but he was a teleologist, and "stood firm by the necessary assumption of a First Originator of all things—a supramundane and extramundane God." There was Bonnet, 1720–1793. Bonnet was opposed to successive acts of creation; he believed simply in evolution

from a creation completed at first. Bonnet, too, so far as nerves are concerned, was materialistic in his tendencies. Nevertheless, he still connected all with religious conviction. He even produced so admirable a demonstration of the truth of Christianity, that when Lavater was bent on converting the Jew Mendelssohn, it was his translation of Bonnet's book he sent to him as irresistible. There was Robinet, too, 1735–1820. He was an evolutionist, and believed in a *génération uniforme des êtres.* It is a German who even says this of him: "In fact, in a certain way this French writer is much more complete than either his English or German successors; the marvels of generative evolution he will not confine as they do to vital tissue only; he will extend it to all dead particles as well, metals, water, the air," etc. To him the loveliness of the female voice, its refinement, in connection with the pleasure it gives us men, is but a Darwinian result of woman's love of talk! Yet to Robinet also, there is only one cause. There is a God, he exclaims, a cause of the phenomena of that whole which we name nature.

But of remarkable anticipations of later evolution-views, perhaps the most remarkable (see Zöckler) is the work, *Conversations (Entretiens) of an Indian Philosopher with a French Missionary*, that was published, in 1748, under the pseudonym Telliamed (an anagram for de Maillet). "The present plants and animals," it is said there, "under influence of external conditions combined with co-operating efforts at perfection on the part of the organisms themselves, have gradually developed themselves in the course of many thousand years." This author seems to make the sea the original fount of life, very much as did Dr. Erasmus Darwin after him. Aquatic plants, perfecting themselves, are transferred to the land; flying-fish become birds; marine animals,

through amphibia, change into mammalia—"but all the present inhabitants of land and air descend from animals of the sea."

In short, it is plain, in the presence of these facts and those named by Mr. Darwin himself, that it is not by any means necessary that an evolutionist should be also a Darwinian, and so, consequently, likewise, both non-teleological and non-theological. We have seen names of excellent evolutionists that were not only excellent theists, but admirable Christians as well.

After all, it is just possible that the essential conclusion here may be Mr. Darwin's own. We know already that, speaking to his friend Hooker of the mutability of species, he says (ii. 39) this: "Lamarck in his absurd though clever work has done the subject harm, as has Mr. Vestiges, and, as (some future loose naturalist will perhaps say) has Mr. D.!"

CHAPTER IX.

NATURAL SELECTION CRITICISED.

We have approached, in the foregoing, the main interest, natural selection, from a variety of directions, and are now more or less prepared, presumably, for a final appraisement of the theory. We shall take the successive steps in it, and examine them in their order; referring always to the account (i. 82) to his own children, which, on the part of Mr. Darwin, we have so far seen already.

Mr. Darwin starts, as is natural, with the voyage of the *Beagle* and what suggestions it had led him to, specially so far as it concerned (1) The Pampean fossils, (2) The succession southwards of the South American Forms, and (3) The peculiar aspect of the Galapagos productions.

1. "Formerly the American continent must have swarmed with great monsters: now we find mere pigmies." These words of the *Journal* (p. 173) refer to the extinct Megatherium, Megalonyx, Scelidotherium, Mylodon, Glyptodon, Macrauchenia, Toxodon, etc., as "the great monsters," and to the existent armadillos as "the mere pigmies." In number, the former seem to be inexhaustible; "the whole area of the Pampas," we are told (p. 155), "is one wide sepulchre" of their remains; and in size they are gigantic. Especially is it the Glyptodon that is in place

à propos of the armadillos. "The little armour-plated Armadillos," says Nicholson in his *Manual* (p. 672), "are represented by the colossal Glyptodon." The enormous disproportion between the past and the present may be understood from this, that, while the last-named monster measured "more than nine feet from the tip of the snout to the end of the tail," it is rare at the present day to meet with any armadillo over two or three feet in length," and there actually exists one (p. 587), the *Chlamyphorus truncatus*, "the total length of which is only about six inches!" Notwithstanding the disproportion between the past and the present, still it was the obvious resemblance common to both that irresistibly convinced Mr. Darwin of the indubitable descent of the one from the other.

2. The point here is that, in the range southwards of South America, the different habitats have indeed different animals as occupants; but, nevertheless, all these different animals are still "closely allied." Closely allied the one to the other, they seem only "to replace" each other. And in this way, here, too, a common descent irresistibly suggested itself to Mr. Darwin.

3. "The South American character of most of the productions of the Galapagos Archipelago, and more especially the manner in which they differ slightly on each island of the group."

Under all three numbers, then,—and we simply *assume* the truth of the facts,—we have the conclusion to community of origin from similarity in difference, at least as a problem suggested. But the strange thing is that, let the similarity point to what identity it may, the idea *origin* is, accurately, no constituent of suggestion under any one of the three numbers. 1. Certain extinct fossils resemble certain living animals; 2. successive habitats in latitude have closely allied occupants; 3. in a certain given

locality, the productions have the type of a certain other locality. All the animals *under any one number* may be, at bottom, or in reality, the same; and all the animals *under all the three numbers* may be, at bottom, or in reality, the same; but where, for all that, is there a moment's question of the *origin* of a single one of them? Here, too, the suggestion,—just as we saw in the case of the various beetles,—the suggestion of mutual derivation, is an eminently natural one; but, so far, there is not even a hint before us of such a thing as *origin*. Change there is, not origin. We have a middle, elastic enough it may be, but we have no beginning, no origin, no first. 1. Before the pigmies there were the giants; 2. side by side with one closely allied animal, there is another closely allied animal; 3. the productions of one region have the type of the productions of another region. If the types are fully formed, no less fully formed *already* are the antitypes. If one closely allied genus is fully formed, so also equally is the next. And if the pigmies are fully formed, surely it will be granted that the monsters, the giants, were a good deal more fully formed, ages and ages ago. Mr. Darwin's book is called the *Origin* of Species, —if we are to consider it expected of us to be as contented in the end of the discussion as Mr. Darwin seems here, so far as its suggestion goes, is it not certain that we, for our part, must feel just a little disconcerted at present? Origin! we are referred from the Galapagos to the South American Continent, and there again the problem stares us in the face, only harder than ever. What is the origin of these South Americans? Again origin! What is the origin of these pigmies? and you only refer us to giants! Good heavens! To be contented that the whole problem of the pigmies was solved in the giants, and never once to have asked what of these! Surely the giants at once suggest an infinitely more instant question as to origin

than the pigmies. That pigmies, too, could come out of giants — such pigmies out of such giants! Was it *selection*, natural selection, condescended to such a feat as that? There was here a mere suggestion to Mr. Darwin, but are we to suppose that Mr. Darwin's consequent work, natural selection, is only to progress to such consummations? Is that what is meant by "the preservation of favoured races in the struggle for existence"—these pigmies? The nine-foot Glyptodon dies, the six-inch armadillo lives—is that the survival of the fittest? Mr. Darwin has a very great respect for the great Palæontologist Pictet. Now it is Pictet who says, "The theory of Mr. Darwin agrees ill with the history of the types of clearly-defined, sharply-cut forms which seem to have existed only for a limited period: hundreds of examples of such might be cited, as the flying reptiles, the ichthyosauria, the belemnites, the ammonites," etc.; and Mr. Darwin is much "struck" with this (ii. 297), and even double-pencil marks it "good;" but in what respect are these ichthyosauria, flying reptiles, etc., more wonderful, and more questionable, than those Glyptodons, Scelidotheria, Macrauchenia, etc.? Then what can have more the character of a mere middle than that simple sequence of "closely allied" that "replace" each other southwards? Surely each of these successive strips must find itself only in the midst of an indefinite middle; and is the receipt for an epic poem, "in medias res," all that is required to be satisfactory here on the part of a naturalist?

The position so far, to say the least of it, must be allowed to exhibit itself as not quite a clear one. Origin, if a necessity for the six-inch armadillo, is not a bit less a necessity for the nine-foot Glyptodon to which for explanation Mr. Darwin refers us. If number two closely allied species originates in number one of the series, where did number one itself come from? And as

for the Galapagos, if they point in that way to South America, do they not point at the same time to a mere possibility so far in the air?

It *is* natural to think that things so like each other may be but modifications, the one of the other—this we have granted and grant; but let them be so, let the armadillos descend from the fossils,—let all these "closely allied" be really brothers and sisters,—let South America have sent a bird, or a shell, or a plant, to the Galapagos, —let bird, or shell, or plant differ slightly—nay, greatly, if you like—on the different islands,—let all that be, admit it all—we are still as far as ever from any solution of the problem—*origin.*

We have no want of expressions of Mr. Darwin's own to make this somewhat striking state of the case even glaring. Thus he says once (ii. 78): "Either species have been independently created, or they have descended from other species." This, while it is again his single alternative of "creation *or* modification," gives species as always already "to the fore." "I have a very decided opinion," he tells Lyell at another time (p. 341), "that all mammals must have descended from a *single* parent;" and further, "with respect to a mammal not being developed on any island, besides want of time for so prodigious a development, there must have arrived on the island *the necessary and peculiar progenitor.*" That is, for any possible *origin of species* "a parent," "a progenitor" is still required! As one sees, islands, according to Mr. Darwin, are to be regarded as geologically too recent to be argued about in his way; for Mr. Darwin, towards his own operations, never hesitates to ask for quite an infinitude of time. But let him go back to any one point in his infinitude,— ten thousand years, a million years, twenty million years, —still he is only, so to speak, in his own middle. A stock is always, as we phrase it, to the fore. Origin of species!

The very thing his whole work is there to explain—species—is always placed bodily before us. As we saw in the illustration of his perpetual favourite woodpecker bird, if the *woodpecker* disappears, the *bird* itself remains. If Mr. Darwin has addressed himself, as we may assume, to the resolution of the problem x^n, is it not surprising that do what he may for the n he has scarcely a thought for the x?

Now, no doubt, all that sounds fair; and it cannot be denied its own grounds. Nevertheless, to some extent, Mr. Darwin already knows it, and at least fronts it. How important the great naturalist Agassiz was to Darwin, a letter of this latter (ii. 215) plainly declares. "I have seldom been more deeply gratified than by receiving your most kind present of *Lake Superior*—I have begun to read it with uncommon interest, which I see will increase as I go on—I confess that it was the very great honour of having in my possession a work with your autograph as a presentation copy, that has given me such lively and sincere pleasure." These words of 1850 could not be intended by Mr. Darwin to gain the favour of Agassiz for the *Origin* published in 1859. Neither had Mr. Darwin, who was only two years younger than Agassiz, any cause to kow-tow to Agassiz at any date. Such flattering expressions, then, were but the outcome of Mr. Darwin's characteristic courtesy. In the event, the opposition of Agassiz to the *Origin* was uncon-cealed, and it did prove to Mr. Darwin "*riling.*" He (Agassiz) was reported to say (p. 268), "it is *poor, very poor!*" He also formally wrote against it. Mr. Darwin asks Mr. Huxley, "Have you seen Agassiz's weak metaphysical and theological attack on the *Origin?*" "Agassiz's name, no doubt, is a heavy weight against us," he writes to Asa Gray (p. 333), but adds, "the whole article seems to me very poor—I am surprised that

Agassiz did not succeed in writing something better—How absurd that logical quibble, 'If species do not exist, how can they vary?' As if any one doubted their temporary existence."

I assume that Agassiz meant, on his part, precisely what the phrase, as above, means on our part, about "species already to the fore." Vary—variation! we may fancy Agassiz to cry. Variation of what? Variation alone is a *non-ens.* To be an ens, it must be *in* or *of* something. Insects vary, birds vary, dogs vary; but the insects *were*, the birds *were*, the dogs *were.* The variation was of *them;* they were not of *it.* One can hardly believe, if this was Agassiz's meaning, and if it were understood so, that Mr. Darwin could have called it only "a logical quibble." "As if any one doubted their temporary existence," he says! Now, shall we assume that as a veritable homologation on Mr. Darwin's part of every word of ours that has characterised his process for the origin of species, as no *origin*, but a mere *middle?* Perhaps he has really no desire on the whole, and in the main, to prove more than this, the modification or transition of one species into another species. So it may be that, mistaking what is the point with Agassiz, he says, of course, species temporarily exist—for so long there are *a* species and *a* species; but the one only grows out of the other. To Mr. Darwin perhaps it would seem that this is *origin.* In fact, with him, it all comes to this, modification by selection! Give Mr. Darwin but Modification against Creation, and Mr. Darwin is satisfied. Now, modification as modification is never a First, it is always process, movement *between*—movement of something *into* something. It actually seems as though Mr. Darwin will give *you* the "something," if you will but give *him* the "movement."

Of course, if Mr. Darwin is going to mould or modify a material, however primary the moulding or modifying

may be to him, he must *have* this material to begin with.[1] He does, then, really give himself *something* for a commencement; but it is as a mere postulate to start with and presently be let drop. He may be found to condescend, then, for a moment, actually to creation. "Under present knowledge," he says (ii. 210), "we must assume the creation of one or of a few forms in the same manner as philosophers assume the existence of a power of attraction without any explanation;" and (p. 329) he puts a similar weight on "four or five primordial forms" and "some single prototype." Words to a like effect are to be found in the *Origin*, too. Nevertheless, all in that connection must be conceived now to have reduced itself to this single passage (iii. 18): "I have long regretted that I truckled to public opinion, and used the pentateuchal term of creation by which I really meant 'appeared' by some wholly unknown process." Four years earlier, he had already said (ii. 211), "I think that all vertebrata have descended from one parent; but how that parent '*appeared*' we know not."

There can be no doubt, in fact, that Mr. Darwin, at first, and for long perhaps, never thought of a beginning. His problem was—as in the Pampas, as in South America, as in the Galapagos—how allied passed into allied. "Without any explanation," simply to assume a beginning appeared to him, as we see, even specially "philosophical." As to the origin of the inorganic, he (iii. 236) declares that he never troubles himself about "such insoluble questions;" and as to that of the organic, he (p. 18) opines: "It is mere rubbish thinking at present of the origin of life; one might as well think of the origin of matter."

Mr. Darwin did, however, in the end, think of the origin of life. From a note (iii. 18) we find him in

[1] "First catch your hare," says the cookery book.

1871 speculating about the spontaneous formation, in "some warm little pond," "with all sorts of ammonia and phosphoric salts," etc., of "a proteine compound" —"ready to undergo still more complex changes." He tells *Wallace* in 1872: "I should like to live to see archebiosis (spontaneous generation) proved true, for it would be a discovery of transcendent importance;" and, equally significantly, he admits to *Haeckel* (p. 180)," If it could be proved true, this would be most important to *us!*" Anent his proteine compound in connection with these degenerate days, however, he somewhat comically laments, Even "if (and oh! what a big if!) we could conceive that it actually were formed"—"such matter would be instantly devoured," "which would not have been the case before living creatures were formed!"

Spontaneous generation, then, he cannot have, and creation he will not have; so there is nothing left him but his indefinite "appeared." Somehow, and somewhere, and at some time—but how we cannot tell, and where we cannot tell, and when we cannot tell—there "appeared" a living organised First. That living organised First varied into all that we see—all that we see in every beast of the earth, and fish of the sea, and fowl of the air, and everything that creepeth upon the earth. It is not the First, then, that is Mr. Darwin's affair; it is alone that into which this First varied: Mr. Darwin can operate alone on his own middle.

But even so the principles of the middle, as is seen, do not conduct, and are not a clue, to the principles of the beginning. The two are utterly disparate; utterly distant, the one from the other: the "appeared" is without explanation. No doubt, with it (his "appeared"), Mr. Darwin believed that he had avoided every difficulty. But is that so? Whether as created, or whether as

chemically formed, or whether as only "appeared," does not the *petitio principii*, the assumed and presupposed First, in good truth even contradict and set at naught the very rationale, the very principles of the middle—the middle that is to realise and accomplish all? That *rationale*, these principles, are to rest on external accretion, while the First by the very terms of it, by very supposition, introduces the principle of intussusception or of evolution from within. All is at last, as in the inorganic, so in the organic, to be reduced to the mere externality of physical law. By external accident of environment, it is to be understood that an external selection, which is absolutely natural, physical, is to put hand on an external accident of variation. Now that which is there to be submitted to this externality—the hypothesis, the First—is already an internality. Let it be created, let it be chemically formed, let it have only "appeared," it is already a living organism. It is already a concrete, possessed of a concreted interior, and capable of evolution and development. Now, suppose that we ourselves—we ourselves in place of Mr. Darwin—have been put in possession of this indispensable preliminary, this necessary *prius*, would we ourselves turn to the machinery of Mr. Darwin even for production of the middle? By very hypothesis, the First itself is already a middle—an organised, concrete, living middle, an interior, which, just *as* that, needs simply, for evolution and development, the due conditions. What are they—what are the due conditions? Why, what should we require for the fostering of a first life, but that which we already know to foster all life, as we see it?

Mr. Darwin would preclude the possibility of this. He will suppose his First only to be influenced from without, and not to develop from within. He denies to it any aboriginal power of adaptation or principle of

improvement (ii. 176); that it should be "diversely variable" from without is for him enough.

But it is no question of allowance: the "appeared" First is by very supposition (were it no more than the imagined proteine) granted to be at least so far an organism that it is "ready to undergo still more complex changes"—as, for example, into you and me at last, and whatever else that lives!

Now, then, again, for the fostering of this organism, why should we feel driven laboriously to invent a specialty? Are we not already supplied with means enough? What are conditions? We need not refer to Kant and his provisions of more feathers for birds, and thicker integument for wheat, in the cold (*Lectures*, p. 391). What are, or at least *were*, conditions to Mr. Darwin himself? For plants we have this in the *Journal* (p. 338): "It is curious to observe how the seeds of the grass and other plants seem to accommodate themselves, as if by an acquired habit, to the quantity of rain which falls on different parts of this coast. One shower far northward at Copiapo produces as great an effect on the vegetation as two at Guasco, and as three or four in this district (Conchalee). At Valparaiso a winter so dry as greatly to injure the pasture, would at Guasco produce the most unusual abundance" (from Valparaiso to Copiapo, 420 miles). For animals the same authority (p. 492) has this: "I can hardly doubt that these rats have been imported, and, as at the Galapagos, have varied from the effect of the new conditions to which they have been exposed."

Later, of course, Mr. Darwin, with at least contradictory expression, hates conditions; and the reason is his theory. "Whilst the influence of a struggle between creature and creature is so hidden," he says (ii. 212), "I am inclined to swear at the North Pole," etc. He con-

fesses to Hooker (p. 390) that, "his present work leading him to believe rather more in the direct action of physical conditions," he "regrets it, because it lessens the glory of natural selection." He laments to T. Davidson (p. 369) that he has not been able to weigh and compare the one influence with the other; but his whole desire is to limit the action of conditions to mere variability in organisms.[1]

But if conditions can do, as they are above quoted to do, why supererogatorily have recourse to any more machinery? I am sure that there is not an evolutionist in the kingdom who will not be quite glad to get to his goal with never a rag to his proteine unless conditions.

This proteine, even as imagined, is itself a form. Whether as created or appeared, it is a concrete. In the abandonment of his "Pentateuchal truckle," Mr. Darwin had no advantage. A *form* that appears is as awkward for him, as a form that is created. We have still no more than a middle before us. Mr. Darwin does not, as the algebraist does, apply his machinery to a mere x. His x is already an ax: it is a form, an organism, a concrete, even a life. That there is an a with his x,—that always for him species *already* are,—is no mere "logical quibble;" and it is not met by the ingenuous *propos*, "as if any one doubted their temporary existence!"

We pass now to (2), which is the check of adaptations—what precedes is (1); the whole statement (i. 82–84) gives five points.

[1] The following references to the *Life and Letters* will be found exhaustive and not a little instructive, on the whole subject of conditions:—i. 22, 82; ii. 3, 14, 28, 29, 82, 87, 90, 92, 96, 97, 121, 122, 123, 143, 169, 174, 212, 231, 232, 259, 295, 317, 319, 369, 390; iii. 24, 25, 70, 71, 111, 158, 159, 232, 236, 344. It is also discussed in the *Lectures*.

CHAPTER X.

CRITICISM OF NATURAL SELECTION—CONTINUED.

THE suggestion of *modification* under (1), leads to the check of *adaptation* under (2).

"Till adaptation could be explained," says Mr. Darwin, "it seemed useless to endeavour to prove by indirect evidence that species have been modified;" while in the known references to the action of conditions, or to Lamarckian will, explanation there is none. Neither the one nor the other will explain a woodpecker or a tree-frog, or a hooked or plumed seed.

With respect to conditions, we have already seen enough in Mr. Darwin's regard; and for our own part, if we acknowledge their function to *foster* principles, we are as incredulous as he is of their power to *produce* them.

Lamarck, we may remark too, need not be denied his relative right of place. Dr. Krause means it for distinguished praise when he styles Erasmus "a Lamarckian before Lamarck," and both of the grandsons endorse the book (Krause's). Lyell seems to exclaim with some surprise to Mr. Darwin, "You do not mean to ignore Lamarck: he at least was for mutability of species, and the men of his school appealed to domesticated varieties." Mr. Darwin, for his own part also, while on almost all occasions even abusively contemptuous of Lamarck, yet

admits, from an early hearing of his views, a probable influence on himself, calls him in the *Origin* "this justly celebrated naturalist," and acknowledges to Hooker (ii. 23), "Heaven forefend me from Lamarck nonsense, but the conclusions I am led to are not widely different from his." Nor, whether in sexual or natural selection, is there wanting, it may be, at least the touch of a reflection from Lamarck. If the female choose the male for his manliness, it is her *will* that acts; and if in stalking his fish ever deeper and deeper, the legs continually lengthen to the stork, this is really not alien to his *will* even if due to successive advantage.

Nay, it is almost possible to go further. Here is a mass of formless jelly—an amœba, say. It already takes in, digests, and throws out; and it already moves. Well, now, every one of these functions it just improves infinitely by adoption of advantage after advantage infinitely in the infinity of time. It acquires a stomach, and an end-gut. It acquires a mouth, and it gradually fills it with tongue and teeth that conduct into a gullet. It acquires processes to move by, which become hip, and thigh, and knee, and shin, and calf, and ankle, and heel, and sole, and toes—toes with nails on them. What is this but Lamarckian acquirement through *nisus* of wish. It wants to take in better and better—it wants to give out better and better—it wants to move better and better: and so better and better just follows to its wish. Absolutely, the shrewd old grandfather, imperious Dr. Erasmus, did not, after all, say anything so very far away when he presumed that "the tadpole acquires legs and lungs—when he wants them, and loses his tail—when it is no longer of use to him!" And so, consequently, neither, after all, was "old J. E. Gray at the British Museum" elsewhere than in his rights when, says Mr. Darwin (ii. 242), "he attacked me in fine

style: 'You have just reproduced Lamarck's doctrine, and nothing else, and here Lyell and others have been attacking him for twenty years, and because *you* say the very same thing, they are all coming round; it is the most ridiculous inconsistency,'" etc. And both of you, he might have added, only tell stories to children, like the Sophists in Plato (*μῦθόν τινα ἕκαστος Οαίνεταί μοι διηγεῖσθαι παισὶν ὡς οὖσιν ἡμῖν, Soph.* 242).[1]

[1] That Mr. Francis Darwin should admit so freely *adversaria* in his volumes, is very admirable on his part; nor if it is through confidence in his position, will that detract from his fairness. He allows Sedgwick publicly to tell his father, "Many of your wide conclusions are based upon assumptions which can neither be proved nor disproved—parts of the book I laughed at till my sides were almost sore." We have seen already, by favour of note or text, what was said by Pictet and by Haughton of Dublin. He has no hesitation in letting us know that the partiality of such intimate friends as Henslow and Jenyns (Bloomfield) only "goes the length of imagining that many of the smaller groups both of animals and plants may at some remote period have had a common parentage," and is not equal to say that "the whole of the theory cannot be true, but that it is very far from being proved; and doubts its ever being possible to prove it." Sir John Herschel characterised the proposition of the *Origin* as "the law of higgledy-piggledy;" we are told that Mr. Darwin felt this as "evidently very contemptuous," and as "a great blow and discouragement." We are allowed to know also (ii. 39) that "Owen is vehemently opposed to any mutability in species." We did not need to hear, but we do hear, of how Agassiz "considered the transmutation theory a scientific mistake, untrue in its facts, unscientific in its method," and how its arguments "made not the slightest impression" on his mind. We do not wonder that the extravagant exclamations of the distinguished French naturalist Flourens are quoted with silent contempt: "Que d'idées obscures, que d'idées fausses! Quel jargon métaphysique jeté mal à propos dans l'histoire naturelle! Quelles personnifications puériles et surannées!" As Mr. Darwin at last was elected to the French Institute too, we are not surprised to be allowed to read (iii. 224) that its doors had been long kept closed to him because the science of his chief books was "not science, but a mass of assertions and absolutely gratuitous hypotheses." We must,

(3.) Haunted by the idea of modification, and arrested by that of adaptation, Mr. Darwin now sets himself, in every way he can think of, to seek for evidence on what

however, admire in excelsis the chivalrous candour that tells of Sir Wyville Thomson. This naturalist "wrote, in the Introduction to the *Voyage of the Challenger:* 'The character of the abyssal fauna refuses to give the least support to the theory which refers the evolution of species to extreme variation guided only by natural selection.'" Whereupon Mr. Darwin writes (November 11, 1880) a letter to *Nature.* This letter, says Mr. Francis, "is, I believe, the only instance in which he wrote publicly with anything like severity." "My father," he continues, "after characterising these remarks as 'a standard of criticism, not uncommonly reached by theologians and metaphysicians,' goes on to take exception to the term extreme variation, and challenges Sir Wyville to name any one who has 'said that the evolution of species depends only on natural selection.' The letter closes with an imaginary scene between Sir Wyville and a breeder," who is supposed to make use of "emphatic but irreverent language about naturalists." "The letter, as originally written, ended with a quotation from Sedgwick on the invulnerability of those who write on what they do not understand." Mr. Darwin must have been "*riled*" indeed to have permitted himself to give way to such an expression in regard of a man as eminent as himself, and the head of an expedition which was privileged to have been under much more distinguished auspices than even those of the *Beagle.* The expression was omitted, however, and "on the advice of a friend, curiously enough, whose combativeness in the good cause Mr. Darwin had occasionally curbed!"

Perhaps, however, the most glaring instance of the fairness of Mr. F. Darwin to adversaria is the even gratuitous note (ii. 260) which concerns the *Saturday Review* on the *Origin.* The reviewer is quoted to say that, "if a million of centuries, more or less, is needed for any part of his argument, he feels no scruple in taking them to suit his purpose;" and the instance in view relates to the denudation of the Weald, which suggested to Mr. Darwin "that a longer period than 300 million years had elapsed since the latter part of the secondary period" (ii. 264). The age of the whole earth, so far as life is concerned, is now generally put down at 20 millions of years!

he wants. He reads a multitude of books together with whole series of Journals and Transactions. He sends out queries "wholesale" to breeders and gardeners; he converses with breeders and gardeners, and with pigeon-fanciers—even at Gin-palaces in the Borough. He calls this "working on true Baconian principles." It was certainly the means of producing, as we have partly seen already, an enormous compilation of what are termed facts—facts not subjected, we may allow ourselves to say on the whole, to any very strict or straitened regulations of reception. But the precise result was this, That the secret of breeding was selection ("Selection was the keystone of man's success, whether with animals or plants"): so that the only question now was, Did Nature act with her species as the breeder acted with his races? In other words, does Nature breed, even as man breeds? —does she breed spontaneously, naturally, and unconsciously, just as he breeds consciously, elaborately, and artificially?—does she breed species, just as he breeds races? Even at a glance one sees that this is a hard matter. The two cases and places seem very widely apart and very far from being on a par. No doubt nature can foster individuals by contingency of chance, just as man does by necessity of plan. We saw how the horses of the marsh were fed heavily into flesh. But how is she to breed—breed with a purpose—breed to a foregone conclusion, if even blindly? Bulls, and rams, and stallions, cows, and ewes, and mares, are all chosen. But nature is utterly indiscriminate. We all know that if we want robust children, or blue-eyed children, or red-haired children, we are almost to a certainty sure to succeed if we will but accordingly pair. No breeder knows any secret but that. Whether he would breed general quality—the strong, or particular quality—the woolly, he has only suitably to pair. But can Nature do

this—can she, too, compel herself to pair according to rule?

The conclusion of reflection here will be that there is no conceivable check to the indiscriminate intercourse of nature unless that of force. The strongest *may* exclude the rest. It is not so certain, however, that "the good old rule," "the simple plan," is, really, the norm of nature. It is not so that we find the lower animals at our side.

"Man adapts living beings to his wants—he *may be said* to make the wool of one sheep good for carpets, and another for cloth," etc. But Mr. Darwin could not find anything that might correspond to these, his own words, in nature—at all events at the first look. "How selection could be applied to organisms living in a state of nature remained for some time," he says, "a mystery to me." The exact "some time," we are told, was "fifteen months." After fifteen months of inquiry as above, he happens to read *Malthus on Population*, and a way is opened to him.

(4.) Malthus would prove that, left to themselves, or as is the nature of each, Population outruns Production. If the one, consequently, remains unchecked, at the same time that by no possibility can the other be increased, then the balance between both can be kept even only by an expanding death list. That is the Struggle for existence. The weakest fall.

Mr. Darwin was well prepared, he avows,[1] to appreciate this struggle "from long-continued observation of the habits of animals and plants;" and it at once struck him "that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed; the result would be the formation of new species." Now, as we already know, the theory of natural selection remained complete for long under these

[1] See back to pp. 198, 199.

four numbers. So far the whole question, consequently, is of the struggle for existence as a principle in nature that breeds—species. This struggle, as yet, is the only agent that it is given us to see actually at work; and it is the success of the action that determines the character of the work. What succeeds, namely, are favourable variations, and what fails, unfavourable ones. The latter, consequently, are in the end weeded out, while the former are selected for advance. But this advance is growth of advantage; and as advantages accumulate in an organism, there is in the species a necessary change.

Now, this is no proof of the fact of modification. Taking the fact for granted, it is only a proposal to explain it. But does it do so? It is a mere feather in the air. How do you think the modification happens? Why the best fitted to live, do live; and as they continue to live, they can only improve—improve into higher species! But is that so certain? Cannot they continue to live, continue so far to improve even, without being transmuted into a new species? Even granting the struggle for existence and the consequent success of the ablest, where is the necessity of the transfiguration of these? Mr. Darwin will not hear of conditions. Now, unless the struggle is conceived to be one only of individual strength, it is really on conditions that the nature of the result will depend. The advantage will be to the hairy coat in the cold, to such and such claws in digging, to the prehensile tail for climbing, to the long-sighted for seeing, the quick-eared for hearing, the swiftest for running, and to such as can live, like certain worms described by Mr. Darwin, amid sulphates of lime and nitrates of soda! Nay, even elements of destruction can become elements of preservation, as the pike may be made a scavenger of life to the trout, devouring out of

the way all the sick ones, and leaving free the strong. But for the hawk, the woodpigeon would destroy every green ear. In fact, for the struggle for existence the advantage may be to be weak as well as strong, slow as well as swift, light as well as heavy, thin as well as thick, tall as well as short, small as well as large, etc. etc. Nay, with such a struggle for existence as, according to Mr. Darwin's belief, has necessarily ended in a man, is not this a strange premiss of Mr. Darwin's own? He tells Lyell (ii. 210), "The one primordial prototype of all living and extinct creatures, may, it is possible, be now alive!" It was only out of struggle that a man could come, and he has come; yet that out of which alone he could come, need not have struggled at all: it may be now absolutely unchanged the same that it was millions and millions of incalculable centuries ago? And if the struggle was, as Mr. Darwin seems only to figure it,—in independence of conditions, that is—one only of individual strength, what could or should now be alone in the earth, the sea, or the air? In each element, through internecine slaughter, there could only have been the production of a single triumphant one; for these incalculable ages would surely have given time enough for that,—apart from the cunning of Nature in preservation of even the least of her tribes!

But this allegation of a struggle for existence (and in connection also with natural catastrophes) has been already subjected to separate consideration, and with this result: There are animals that prey on animals, and there are plants that supplant plants; but all of them, animals or plants, can save themselves, and, on the whole, the balance of life is, more or less, a permanent one. It is only man that, by injudicious interference, so far as nature is concerned, would make the balance a bad one (see back, Darwin on the *stercovora*, at p. 82).

Nevertheless, it is undoubtedly by this struggle for existence that Mr. Darwin proposes to realise such selection on the part of Nature, as will effect for her what the breeders effect by art. Just as breeders select and so produce the favourable races, so does Nature, by the struggle for existence, select and produce the favourable species. Of course, the two expedients are precisely the contradictories of each other. There all is affirmative, here all is negative. While the breeder is all for congruity and peace, Mr. Darwin, in the first place at all events, is all for incongruity and war. But the strange thing is this, that with all his skill and all his contrivances, no breeder has yet produced a new species; and no breeder can make a new race even which would not presently revert to the original again so soon as his care was removed from it.

Yet perhaps this is stranger. Mr. Darwin, by his own confession, is precisely situated in this respect as the breeder is. If we read the postscript to the letter (iii. 25), we shall know that Mr. Darwin, in his own words, declares: "In fact the belief in natural selection must at present be grounded entirely on general considerations.—When we descend to details, we can prove that no one species has changed [*i.e.* we cannot prove that a single species has changed]; nor can we prove that the supposed changes are beneficial, which is the groundwork of the theory; nor can we explain why some species have changed and others have not" (the square brackets are in the book).

These declarations are crucial. General considerations alone support natural selection: the very groundwork of the theory is incapable of proof.

Elsewhere (ii. 362) Mr. Darwin very unmistakably expresses himself to the same effect. "I quite agree with what you say on Lieutenant Hutton's Review; it

struck me as very original. He is one of the very few who see that the change of species cannot be directly proved, and that the doctrine must sink or swim according as it groups and explains phenomena. It is really curious how few judge it in this way, which is clearly the right way."

Now what is the effect of all this?

Mr. Darwin acknowledges himself to depend for the most part on breeders for his support; and not one breeder ever made a new species—not one breeder ever fostered an individual specialty, an individual modification, into an increase or decrease of development, but that increase or decrease of development, and the whole peculiarity thereupon dependent, did, when left alone, in the end, return into its ancient and original quality, into its ancient and original proportions. And now—in these two quotations, namely—he, Mr. Darwin, declares it impossible to prove any such process in nature!

We come now to (5), or what concerns the last of Mr. Darwin's articles in his theory, what he calls *Divergence*, namely. This, however, has been fully anticipated in our seventh chapter, and leaves no call for more than a reminder or two here. There was, for example, the extraordinary joy of Mr. Darwin when he came upon Divergence in his carriage. There was the little perplexity, too, of Mr. Francis in regard to it, with his explanations to meet any such perplexity on the part of his father's readers. There were the illustrations of the horses, too, and of the plot of ground with the mixed seeds. But the important point was Divergence itself. Divergence and modification are explained to mean pretty well the same thing; or divergence is but the new "place" that modification takes. The new relation with nature is what conditions the new species; and both modification and divergence, the one included in the other,

are the steps to it. The divergence but strengthens and carries on whatever responsibility has been committed to the modification (the variation). Divergence, in fact, as has been said, and as is seen in the horses, is no more than an illustration of modification.

The process, then, as Mr. Darwin figures it, is now complete, and we may confine ourselves at last to this bare process itself, or to the bare moments of it. These moments are two in number: A, The Variation; and B, The Natural Selection as such.

A, The Variation. Mr. Darwin conceives variation, any variation, to be preceded by *variability* as the necessary constitutive quality, state, condition, of organisms generally and as such. "Mere variability," we are given to understand (ii. 87), is exemplified by the mere fact that "the child does *not* closely resemble its parent," or (p. 122) "is not absolutely similar to its parent," or (p 123) "does not exactly resemble its parents." "I say over and over again," asseverates Mr. Darwin (p. 389), "that natural selection can do nothing without variability." He says also (p. 388), "Mere variability, which is the necessary foundation of all modifications, I believe to be almost always present, enough to allow of any amount of selected change." This variability further (p. 373) is characterised as "undesigned." "Designed variation" would make his "deity," "natural selection," "superfluous;" but what weighs with him against design is, "seeing what an enormous field of undesigned variability there is ready for natural selection to appropriate." It is with this same reference to mere natural process, mere physical fact, in his mind, that (p. 157) he does not look at variability "as some necessary contingency with organisms," as "some necessary tendency." He will have no evolution as of an interior with principles laid into it. He admits, however (p. 87), that external

conditions are elements "in causing mere variability;" but (p. 122) he equates with external conditions as such cause "the mere fact that in generation the child is not absolutely similar to its parent." He doubts (iii. 158) whether species are much more variable at one period than another, "*except* through the agency of changed conditions." His latest statement, however (July 19, 1881), is somewhat slack even as to this efficacy of external conditions: "I still *must* believe that changed conditions give the impulse to variability, but that they act *in most cases* in a very indirect manner."

We have quite similar expressions when it is the term *variation* that is used. A *variation* is to him even the most slight and trifling difference. It is by "slight differences selected" that a race or species is at last formed (p. 87): "I believe most beings vary at all times enough for selection to act on" (p. 123); Lowell "overlooks the importance of the accumulation of mere individual differences" (p. 319); "selection regulates, in a state of nature, most trifling differences" (p. 320); "very slight differences are continually found to be important" (iii. 161); "the more I work, the more I feel convinced that it is by the accumulation of such extremely slight variations that new species arise" (p. 33). The special slight variation he is speaking of here is that of "a bird born with a beak $\frac{1}{100}$th of an inch longer than usual." Similar instances also mentioned are (ii. 339) "seals beginning to feed on the shore;" bats (p. 336) "taking to feed on the ground, or anyhow, and anywhere, except in the air;" (p. 318) "a British insect feeding on an exotic plant;" variation of "direction" in the tusks of an elephant; (*Origin*, p. 141) "the black bear swimming, with widely open mouth, catching insects in the water." Mr. Darwin admits (ii. 336), "I know of no fact showing any the least

incipient variation of seals feeding on the shore;" and he might very well have added, neither do I know of any such in the other cases, birds, bats, insects, elephants, bears, or whales: they are only supposititious. Lyell (iii. 20) will be found excellently to object that the only mammalia which are able to reach oceanic islands,—bats and seals, namely,—ought to have been modified by this time; but Mr. Darwin, still more excellently perhaps, answers, thus characteristically: "Seals wander much—no one species is confined to any island—hence wanderers would be apt to cross with individuals undergoing any change—and the same remark applies even to bats!"

But the variation to Mr. Darwin is not only slight: it is also casual, a matter of mere accident and chance, spontaneously, independently present in the organism itself. "Any slight modification which *chances* to arise is selected" (ii. 176); "the formation of species I look at as due to the selection of *chance* variations" (p. 87); "no change till a variation *chance* to occur in the right direction" (p. 337); "the action of selection on mere accidental variability" (p. 369). These are all expressions of Mr. Darwin's own (quoted more fully in the *Lectures*). Nevertheless we do catch at times phrases about "laws of variation." "No doubt," Mr. Darwin parenthetically observes (1856) to Hooker in the important passage (ii. 87), "the variability is governed by laws, some of which I am endeavouring very obscurely to trace;" and (p. 125) he talks again of discussing these laws. I do not know, however, that he has ever signalised any one law in the case, or that it was not his cue just to leave it, as a matter of "*chance*," lawless. At all events, he is free to acknowledge (p. 90) to Hooker that, as the words are, "The cases discussed in your last note are valuable to me (though odious and

damnable), as showing *how profoundly ignorant we are on the causes of variation.*" As such causes he certainly does name conditions, and yet (iii. 25) he says, "We really know nothing of what are the important conditions." To his son (iii. 346) he seems only to have had an "ever-present wish to learn something of the causes of variation." It is quite certain, too, that he will not have these causes internal to the organism itself as matter of innate plan or as more than is implied in mere ordinary, physical, mechanical hap. He will not allow Lyell (ii. 176) any necessity to presuppose an aboriginal "power of adaptation," or "principle of improvement;" he will have only his own "diversified variability." And we have just seen that he was as exclusive with Hooker: variability is not (p. 157), as he (Hooker) seems to suppose, "some necessary tendency in the variability to go on." Natural selection (iii. 33) "means only the preservation of variations which *independently* arise;" it concerns only "slight *spontaneous* variations." In short, as we have seen, the whole affair is this (ii. 124): "I cannot doubt that during millions of generations individuals of a species will be born" (as the bird with the $\frac{1}{100}$th of an inch longer beak) "with some slight variation profitable to some part of its economy." Mr. Darwin cannot doubt this, the rather that he gives his imagination millions of generations to ramble in. Why cannot he have said at once: I cannot doubt but that in millions of generations new species will form? What is the use of gratuitously putting off the climax by the shoving in of an equally imagined variation that adds not one single iota of what explanation is desired?

We have seen how Mr. Darwin cannot too much accentuate the smallness, slightness, triflingness of the initial variation or difference that shall at least open the way to the eventual specific change. But when we

think of what, from the nature of the case, in plant or animal, among all possible imaginable chances, the first could only be, we feel it difficult to conceive of any such abstract, isolated, single accident ever developing into such a concrete entity as a species. Of possible first differences in a plant (and, i. 98, iii. 333, it always pleases Mr. Darwin to exalt plants), there may be, as I put it elsewhere, some initial new streak, some initial new caruncle, nodule, tubercle, alto-relievo, or basso-relievo, some mere dimple, or some mere lip, some mere initial fold, pucker,—some mere stain even—some mere slight increase, some mere slight decrease, some mere slight change of shape, some mere slight change of direction even. Such changes, as hollows, may be fabled, to fashion new joints, or, as growths, new fibrils, tentacles, tendrils, etc.; but can they be more than fabled? So in Mr. Darwin's own instances of animals; the bird with its $\frac{1}{100}$th of an inch of more beak; the elephant with a tusk a little more to the left or a little more to the right, up, or down; the bear that takes to the water, the bat, the seal, the British insect. I do not think that the imaginary narrative which we have offered of the bird transformed into a woodpecker will strike any one as unfair; and is it anything more or better than a mere story for children? Let us compare such transformation at the hands of nature with that, say, of a rock-pigeon into a fantail at the hands of the fancier. How different they are—how incomparable they are! And Mr. Darwin invites the comparison: he names quite in the same breath (i. 314) "the accumulated variations by which the beautifully adapted woodpecker has been formed," and "the enlarged crop of the pouter, or tail of the fantail." The fancier, pairing, again and again, and yet again, like exceptional tail with like exceptional tail, converts a rock-pigeon into a fantail. But conceive

nature similarly to convert any ordinary bird, a thrush say, into a woodpecker—only by the struggle for existence! Is it conceivable—is it not absurd? If the fancier were deprived of the power of pairing, is there any simulation of a struggle for existence possible to him that would still accomplish his purpose?

It is at least natural to shrink from agreement with the putting of such weight on the accidental variation of the individual in wind and weather, and at the beck and bidding of every common contingency. Of course the fact of such variations never gives a moment's doubt: it is only the weight of the enormous responsibility with which each singly superficial accident is to be supposed burdened, that arrests conviction. Of course all varies, nothing remains the same, no two things *are* the same; but—this march from a single external abstract ace of accident to a concrete internality of plan? We do see accidents of the individual daily; but they all revert. Despite every accident the individual still remains in the bosom of the species. A blackbird shall appear in your garden with a white feather, but it will also disappear—not but that such a *variety* may elsewhere exist, as in Arcadian Cyllene! But really thousands and thousands of such accidents we see revert, and daily too. Deformed parents may reappear in perfect Phœbuses of children. The left-handed father may have a dozen right-handed sons. If the first Strabo squinted, or the original Pætus blinked, so, in all probability, did not the last. Plancus, Plautus, Pansa, Scaurus, Varus, Valgus are all illustrious names enough: it is pretty certain that not every one that bore them was like the first of each, either plain-soled, or splay-footed, or spread-toed, or duck-ankled, or knock-kneed, or bandy-legged. These are the sort of variations feigned, and not one of them but reverts.

It is true also that Mr. Darwin has still a word to

interpose here. It was the freedom of cross that kept bat and seal up to type; and so it is the like freedom of cross in great communities that wipes out special marks. Isolate these particularised individuals, and the particularity might *not* revert. It is not so certain, again, for all that, that isolation has any such power. Consult the references to isolation in the *Life and Letters;* and Mr. Darwin will be found, as he says himself, to "oscillate much." At one time (iii. 160) he was "all for isolation"—at another he "doubted much."

Certainly, too, it is the case that if isolation is to be the principle relatively effective, it is not well possible to place that principle more favourably than in the Galapagos. I question, and on his own showing, the partial isolation from island to island; but there can be no question in regard to the continent of South America and the insular archipelago in itself generally.

Again, nevertheless, even so, may not the simple conditions really do all that Mr. Darwin would ascribe to his own ingenuities of conception? I have urged this in the *Lectures.* If strange conditions are at all to act, surely no stranger conditions can be found than those that these islands display. Mr. Darwin himself, as we have seen (*Journal*, p. 492) "can hardly doubt" that the imported rats and mice "have varied from the effect of the new conditions to which they have been exposed;" and if these, why not also the remarkable finches? Then what of the *tortoises* and *lizards*, which likewise are so peculiar? "From what country" the latter arrived —if they did arrive—"it is impossible to say, as their affinity is not very clear to any known species," and it is out of the question to think, in their connection, of the monstrous lizards of the Secondary Epochs. The huge tortoise, again, is called "aboriginal," "it is found nowhere else in this quarter of the world." "It may be

questioned," Mr. Darwin avows, "whether it is in any other place an aboriginal." One asks with astonishment, then where did it come from? No South American type will account for it here. And, pullulation of individual differences; are we to suppose that it pullulated out of the bare rock?

Altogether, neither in the Galapagos, nor, in general, anywhere else, can Mr. Darwin put us at home with mere incidental variation, mere pullulation of differences, as the satisfactory and convincing *origin of species.*

CHAPTER XI.

CRITICISM OF NATURAL SELECTION—CONTINUED.

So much for (*a*) the variation. We come now to (*b*) the natural selection as such.

To this part of the process Mr. Darwin, as we saw, though not altogether consciously (at least in connection), gave two forms. Variation was continued into new species: Either, first, as successful in the struggle for existence; Or, second, as naturally divergent into a new place (character, relation, rôle). In either form we are to see the process as the selection on the part of nature of the variation—of the organism that is so varied—into an application, a function, a purpose, a use, that is necessarily correspondently varied.

The whole question, then, is of the truth of this. *Can* the subjects of such variations as are daily exemplified around us, and as we see spontaneously to happen, be really conceived to emerge into new species? *Can* such variations as we are supposed actually to see ever conceivably determine the subjects of them into new species?

Mr. Darwin finds that he must make strong play with the idea of gradation here. "For the life of me, I cannot see," he says (ii. 304), "any difficulty in natural selection producing the most exquisite structure, *if such structure can be arrived at by gradation.*" *If*—but can

it? With such an *if* it is easy for us imaginatively to deceive ourselves. What is gradation? and what are its powers? Of course, it is understood that these questions are limited here to what concerns life, and the organs and organisms of life. Gradation quantitatively, qualitatively, or quantitativo-qualitively, is a wide matter, and not in the question at present. There are gradations of homogeneous quality—motion, for example—which to us are absolutely inconceivable. Say light travels at the rate of 200,000 miles in a second, we cannot in any way mentally *image* such a fact. Suppose the Channel to be a gap of twenty miles, is it conceivable that if we were as swift as light, we could pass from England to France and back again five thousand times in a pulse-beat? When the wind blows at the rate of a hundred miles an hour, it is called a hurricane, and it tears up trees, levels houses to the ground, etc. etc. If it is so violently destructive at less than a mile in a second, what would be the result if it moved even 20,000 times less swift than light? It would certainly blow the Atlantic into the clouds, with the Pacific to follow. Rather it is simply impossible. Conditions must cohere *with* conditions; and for such a tempest on the globe, the conditions on this side and on that are utterly incoherent.

From these and other the like infinitely possible calculations, it is evident that there must be allowed some consideration of correlative conditions as mutually compatible before we can accept the terms of conception or imagination which we see Mr. Darwin at once give himself. He cannot, he says, set bounds to the possible production of any the most exquisite structure, on the part of natural selection, if only "such structure can be arrived at by gradation;" and we see now that there are necessary limitations to gradation in homogeneous

qualities or homogeneous quantities. Much more, then, must there be consideration of such limits when the question is of heterogeneous entities, and of heterogeneous entities, different structures, that are organised and live. Mr. Darwin pointedly derives all the great kingdoms, the one from the other—that certainly with Hæckel in the end, if, as to Lyell, only with modest guardedness in the beginning. On this authority we are to conceive, then, that we can very well reach a man from a sponge—by gradation of structure! Similarly the liver may be regarded as but a transformed heart, or, *vice versa* possibly, the heart as but a transformed liver; at the same time that the competing claims of kidney, prostrate, or uterus are righteously not to be ignored. A cocoa-nut is but a big cherry stone; and Oken is sure that the teeth are but the toes of the head. "Mammary glands," says Nicholson (p. 568), "are regarded by Huxley as an extreme modification of the cutaneous sebaceous follicles." These are sebaceous follicles, the little black pin's points which, detected at times on cheek or brow, fair fingers may elect, as "black heads," to express. Such huge udder, with its half-dozen dugs, and the pin's point of a "black head" side by side, must we not admire the modest fortitude that can name their modification only "extreme"?

So, by simple gradation it is also that an eye is an eye! Lyell (ii. 207) notices this: "the formation of the eye by such variations as those of which a cattle-breeder avails himself!" He would be a clever cattle-breeder who would know where to begin—what knob to catch at, what dimple to dip into. And yet (ii. 339 and iii. 25) "our ignorance is so profound, why one form is preserved with nearly the same structure, or advances in organisation, or retrogades, or becomes extinct" (for all is at the bidding of natural accident

and chance). "Forms" (ii. 210 and 311) "do not *necessarily* advance;" "there can now be *simple* organisms still existing," nay, "the one primordial prototype of all living and extinct creatures may be now alive"—in fact (i. 311) "natural selection is not perfect in its action, but tends only to render each species as successful as possible in the struggle for life." What we have so often seen, namely, a simple casual variation as such may somehow chance to hit—quite naturally—into the conditions of its environment in some new way which shall give it an advantage in the supposed struggle for existence. *And it is in this way that an eye is created!*

Not Lyell alone, but the perfectly open Asa Gray is shocked here. He says (ii. 272): "What seems to me the weakest point in the book is the attempt to account for the formation of organs, the making of eyes, etc., by natural selection; some of this reads quite Lamarckian." Mr. Darwin himself is obliged to confess (p. 273) that he is in the same respect not very differently minded: "About the weak points I agree: the eye to this day gives me a cold shudder; but when I think of the fine known gradations, my reason tells me I ought to conquer the cold shudder." (But does reason do so to others?)

It is sufficiently curious that we should find quoted in Lactantius opinions to the same effect on the part of opponents: "There is nothing providential to be perceived in the construction of the living animal; the eyes are neither created for the purpose of seeing, nor the ears for hearing, the tongue for speaking, or the feet for going;—all these members come much earlier than seeing, hearing, speaking, or walking take place." "*Man meint hier*," is Zöckler's referent remark, "*einen perfecten jüngfer Darwins oder Häckels zu hören.*" As we saw already, the "enlightened" Diderot is no such

disciple. This is the French which he objects to Spinoza: "Or c'est pourtant la dernière des absurdités de croire et de dire, que l'œil n'a pas été fait pour voir, ni l'oreille pour entendre." Of course there is always the possibility of a little fencing on the part of said disciples *Darwins oder Häckels*, who may say, No one has ever denied seeing to the eye, or hearing to the ear. Diderot has still hit in the blank for all that: and for this reason. It does not matter one jot, or one tittle, that you should think, or that you should speak of the "fine known gradations." There may be more and more light; but there is no gradation to it itself. It *is*, only when it *is*. Let there be the dark only, and there never will be light.[1] It is itself—itself alone—and nothing else. And so it is with sight. All the gradations in the universe never move a step to it. There may be gradations *in* it, but there are no gradations *to* it. It is *sui generis*. It alone is itself. The whole is there in the instant that the first germ is there—but only then, and never, in a dot, a mote, a speck, till then. The entire problem of light is implied in its very earliest dawn; and so equally the problem of sight. Strange that Mr. Darwin should find in gradation that power of creation which he would seem to deny everywhere else; for, as we see, for the first of sight, as for the first of light, there can only be, in either case, simply itself.

But as variation is a process, and no less selection a process, each implying a material, a subject of the same; so gradation itself, by the very term of it, does not create that which it is only concerned to grade. Gradation must have a *what* if it (gradation) is even to be; and gradation as gradation has no power to create this, that, or any *what*, let it act on such *what* as it may,

[1] "As well specify the time required for something to come out of nothing."—Schelling, xi. 238.

once said *what* is. The what of the faculty of sight may have been as small a germ as you please; still so soon as that germ was, sight was; and before that germ was, sight simply was not. Almost it would seem—with this of gradation before us—as though all difficulties would become easy, if only (graded into disappearance) they were thought *far enough back*—as though Mr. Darwin would really enable himself to see by shutting his eyes.

That gradation indeed cannot create, we have only to look around us. You shall make blue, by accumulation of blue, as intense as you may; but you will never make it a red or a yellow. Even of any colour in the rainbow, it is in vain to seek to establish the origin of it by any gradation from this side or from that. Oxygen, hydrogen, nitrogen,—carbon, sulphur, phosphorus,—potass, soda, lime,—lead, copper, iron: gradation will not do much to identify such differences as these. So with animals. It is an enormous presumption to say: They are just all of them protoplasm; for let them be protoplasm, it is certain that not one single particle of protoplasm, whether of organ or organism, is interchangeable with that of another. Reduce a pound of gold, say, even to the hundredth of a grain, that hundredth of a grain, in every one specific quality (as weight, colour, etc.), will be still gold, exactly as the pound was. Gradation that will be insensible in the most delicate scale, is powerless to obliterate the constitutive properties. Even the gradation of temperature that is all-powerful over *states*—ice, water, steam—cannot put a tooth into the *substance* (HO) itself.

But the one word is enough: gradation cannot create. We have only to put the whole animal organisation generally, into the light of this remark to be enabled to see the futility of claiming creation for a series of miscellaneous accidents. "The old argument from design

fails," says Mr. Darwin, with just a delightful little turn in his voice, "now that the law of natural selection has been—discovered!"

But has there been a *discovery?* and actually of a *law?* We have seen an hypothesis—a gourd, as it were, that came up in a night to be a shadow over the land—but a discovery? Can what the Pampas suggested, or South America, or the Galapagos—can what the breeders and fanciers suggested, or what Malthus suggested, or what the split up stock of horses suggested—can either or all of these suggestions be called a discovery? That the similarities in species (as in the beetles, say) should have struck him, and that he should have then asked, What, if naturally varying in time, and so naturally variously applied, they were all just naturally out of each other?—that is a mere supposition—it is no discovery. Even as a supposition, is it a credible one—unless we remove it, far far out of sight, into the dark? Yes: variations, accidents, we know them very well, we see them daily; but they come and they go, they appear and they disappear, they are born and they die out—they really do nothing; and as for forming new creatures, is not that an extraordinarily weighty complication to burden such simple perishable, transitory, passing accidents with? A mother's mark is as perfect a variation of chance as even Mr. Darwin could figure for himself; but when did a mother's mark found a species? *We do not isolate them!* Think you that would be enough as an all-satisfactory reply? They certainly do pass!

So far, one can only see the entrance here of the first fallacy, on the part of the public, in reference to Mr. Darwin. It was really believed that one of the greatest of the known and established experts had *discovered* something. He had discovered nothing. For years he

only kept a commonplace book—a commonplace book for whatever notice, miscellaneously read or heard, might seem to favour his own fondly formed presuppositions, as of bears growing into whales by catching insects in the water! Such notices, as bearing only on his own goal, were illustrations, rather than facts. The relative facts—facts that were really of power and of place as facts, namely — were all known before — they were "general facts of the affinities, embryology, rudimentary organs, geological history, and geographical distribution" —and they were no discovery of his. What contribution could be called his was a theory, an hypothesis, in mere suggestion of the correlation of the facts. Natural selection was a simple supposition of how said "affinities" might come about. And what were facts to him, were they really so valuable? Hearne the Hunter? It is impossible to exaggerate the weight which Mr. Darwin, as to Lyell, lays on such a fact as that. If Lyell would but look at it, he would see that the conversion of a bear into a whale "would be easy," "would offer no difficulty."

As for the putting of confidence in such facts, we have the testimony of the experience of Mr. Darwin himself. "It is a melancholy and I hope not quite true view of yours," he says to Hooker (ii. 70), "that facts will prove anything, and are therefore superfluous;" and again (ii. 80 and 95), "nothing is so vexatious to me as so constantly finding myself drawing different conclusions, from better judges than myself, from the same facts." This experience of Mr. Darwin's own is hardly an argument for placing confidence in his, or any other man's, mere commonplace book of facts.

But if discovery is a misnomer, surely, so, too, is a *law*. Where in that common current, accidental variation, or in that absolutely hypothetical and imaginary

application of it is there the slightest glimpse of a *law?* A law is not something that may or may not happen, as a variation is, and as much more the merely supposititious application of it is. A law, as Aristotle would say, is either *always* or *for the most part* (ἢ γὰρ ἀεὶ ἢ ὡς ἐπὶ τὸ πολύ). But a variation, as again and again characterised by Mr. Darwin, is accidental, is a thing of chance. A variation, therefore, is neither always nor for the most part, but something very much the reverse—a mere unfounded miscellaneous vicissitude; and so, consequently, the application that depends upon the variation—the selection that is supposed to see and seize it—must be still more doubtful, at the same time that it is in itself something absolutely adventurous, the merest fancy of a possibility assumed.

A mere suggestion, then, it may be, of how this variation may go to this side, and that variation to that, with all manner of wonderful imaginary results; but it is neither a discovery nor a law. Mr. Darwin did, two or three times, *mention* law just for the variations as the variations. And a moment's thought will suffice for the perception of how hard it would be to fancy a law for the selection as the selection. The selection is the turning of a variation to a new use; but what that new use shall be is evidently wholly dependent on the nature of the variation itself. Law, then, if there is to be any law at all in the one single process that is postulated, must be limited to the variations, and even there, as said, it is no more than a time or two, merely murmured of. It is never seriously taken to, and is never seriously discussed. To give law, in fact, to the variation, would, for Mr. Darwin, be simply *felo de se.* Chance, and chance alone after all, can prove a lever for the operations that follow as Mr. Darwin figures them. To his way of looking, it is wholly undetermined either when or how the change

shall take place. An organism may remain true to itself for incalculable ages, till suddenly, some fine day, nobody can say how or why, there "chances" to take place a variation "in the right direction"—in the right direction, that is, for selection to take a hold of it and turn it to use. But there is no law in this. There is no more law in it than in the wind that blows. In the wind that blows, if it is a physical necessity, a mechanical fatalism, that is alone determinative; so it is in all that concerns organisation and life. Mr. Darwin's whole purpose would be defeated if you were to interpolate into the physical fortunes, the mechanical haps of bare externality, any concert or rationale as of a law that involved progression in it. That would be more than a mechanical law—such progression in organisation and life would be development, development with a purpose and a principle in it. Now Mr. Darwin speculated only the extension of life and organisation into physics—the consummation, the canonisation, the apotheosis of material mechanism under the single necessity—law, as named law—of gravitation. Any law, as of proper and peculiar progression—design—would thwart Mr. Darwin's entire conception and intention. Like Strato of Lampsacus, he drew to no conclusion but that "whatever exists and whatever is done, is caused or has been caused, by natural weights and motions."

And yet the day was when Mr. Darwin thought very differently. As we said (*Journal*, p. 94), he once admired a grand unity of scheme in the creation of organised beings; and even in 1849 he exclaimed to Lyell, "Truly the schemes and wonders of nature are illimitable." And to think that, as he tells us himself, all this vast change in the attitude of his mind was due to this, that in view of the affinities of organisms, the family bee stung him with the idea that ordinary

variations involving new applications in nature would account for them! In consequence of this idea that all that he saw of unity, and plan, and concert in the universe should so absolutely have left him, and that simply abstract change, utterly fortuitous change, as explanatory principle, should have alone absorbed him! As the dip of the Sultan's head into the water-butt gave him to live an entire new lifetime in the duration of a second; so the principles of the whole universe were altered in a moment to Mr. Darwin by a single sting of the bee. "Darwin's observations on the effects of crossing pigeons," says Mr. Leslie Stephen, "have led to a revolution in the whole philosophy of Europe!"

It is not so certain, however, that the reason of purpose is not as natural to nature, so to speak, as the apparent unreason of material necessity. It is just by a natural reason that the gull, as it rises from the earth, tucks its legs in; or that "an Exmoor pony, bogged in a quagmire, will," according to Mr. Whyte Melville, "flap its way out on its side, to scramble into safety with scarce a quiver or a snort." Nor less under a natural reason is that yellow feathery ball on its one leg of the sleeping canary. Or again, when a bird or crow sits down and looks about it on a point high in air,—say the rod of a weathercock on a belfry from which the cock has fallen,—is that ancestry, think you, or is it natural reason? The heart is not far from the stomach; but the bagpipe end of the latter is so fairly well down that you may take a good deal of cold water into it without any influence that will tell on the former. And talk as you may of gradation through as many animals as your Text-Book can count, is it not nature's own reason, think you, that has drawn through the pulley there that muscle-sinew which has only obliquely to lift the eye? If it is reason in you to cut a trench

or lay down a pipe for the drawing off of water, is it not equally reason in nature to drain moisture from the eye by the express tube between it and the nostril within. With every gradation, can you really explain the successive steps in the laying down of that extraordinary Vidian nerve? "The Rocky Mountain or big-horned sheep—its horns are truly astounding!—their enormous size is out of all proportion to the animal's body, and they curve backwards and downwards, and then curl up again in a sharp point"—what gradation of natural selection could make inch by inch horns like these—or those of a buffalo ten feet apart from tip to tip, or just those of an ordinary ram which we have all seen many scores of times? Was it purpose, the postulated advantage, added the inch by inch?

Is it possible on terms of Mr. Darwin—by gradation, that is—to account for any one element in nature, whether as an element is to us, or as an element was to the ancients? Out of what did *water* come by gradation? Out of what *earth?* Out of what *fire?* Out of what *air?* We have already asked the same question of some of our own sixty-five elements; but is not every one of them by itself, and without a gradation from the others? Is oxygen, then, but a result of the survival of the fittest?

The final cause of the frontal sinuses has been a puzzle for long. It is now suggested that they are to be regarded as but resonant chambers for the voice. Are they there, then, by a natural reason beyond ourselves, even as the spleen is, or as the thyroid gland (with that unintelligible *Myxœdema*) is, or as ever so much else is? Or shall we earn gratitude by suggesting that they are the result of the labours of natural selection through years upon years, and ages upon ages?

Do not the crows set a sentinel to watch? If they,

then, much more men. And whom would men appoint? Why, him, plainly, who could cry loudest. And the children of this man would naturally possess the gift. The power of cry would become hereditary in a family; and ever the member of the family that possessed it best would, of the rest, be the selected one, till to the very improvement of the gift, limit there could be none. And, meanwhile, what would happen *in situ*, in the anatomical machinery itself? Why, the *tremor* of the unusual voice would so shake the cellular tissue between the plates of the frontal bone as to cause absorption of it. These plates, consequently, would become more and more hollow—would separate more and more. And what could be the consummation at last—what but the enormous resonant caverns over the eyes of Stentor himself!

Really, this seems plausible enough to deserve to escape the reproach of only a story for children—of only *μῦθόν τινα παισὶ διηγεῖσθαι.*

But is it so certain, then, that to frontal sinuses any such special power is due? We cannot all of us have had the privilege of a grandfather on the watch; and yet, while the story holds only of individuals, and only of an exceptional family or two, we are all of us, or all but all of us, to be credited with the possession of frontal sinuses quite as roomy with the one as with the other. Besides that, the very possession of frontal sinuses may entail no such specialty of gift. It is not a deep voice that carries far, but a high one; and resonant caverns are much more likely to go with the bass than the treble! Then there is the elephant: it is said of it that it uses its head as a sort of battering-ram; and, "in order that the brain may not suffer from the concussion, the frontal sinuses are extended to two large cavities!" What of "resonant chambers" here?

CHAPTER XII.

CRITICISM OF NATURAL SELECTION—CONTINUED.

WE may illustrate the sort of terms on which the imagination of Mr. Darwin is with his material in this way, too.

There are inodorous women, generally very handsome in form and feature, as well as perfectly sweet and gracious in disposition and mind. Why so, is inexplicable. But there the variation is. That is, by chance it is. Once it is, however, nature selects it—selects it, and preserves and encourages it—in two ways. Men, namely, simply following their inclinations, have it more in sight; and wild beasts, naturally, have it less in sense. Moral: all women ought to be inodorous nowadays!

That is the whole Darwinian philosophy. Take something that anecdotically strikes; then raise it into the semblance of scientific rationale by means of suppositious invention through what has been called natural conjecture (as that war will deprave the race by killing off the bravest as the most exposed, and leaving only the weakest at home; or that it will preserve the bravest to send them home to rub out the weak)! That of natural conjecture, indeed, is quite a lever proper of Mr. Darwin's. Certain animals are white in winter as the snow is (St. Ambrose already notices this of the hare), and, escaping notice, are naturally preserved. It is

really a small matter, and reaches to no distance were it even true. Of course, it anecdotically strikes the common mind; but is it true? Are there, then, more such animals—white always, or white at times—than those of any other colour? And birds' nests (sometimes so thin that the eggs show through), are they always coloured to suit their situation, or are they not always obvious in tree or hedge, in bush or ivy, to the beast or boy that will a moment look for them? Nay, the birds themselves—if it is the accident of colour that is to give them the advantage the one over the other, why is it that no such advantage shows? Why is it that birds have literally all the colours of the rainbow? Ah, but there sexual selection comes in, you say. Well, be it so; but why should black be the privilege of safety or of beauty, to the blackbird or the crow, while it is white that similarly advantages the pigeon? If such and such an animal—a hare it may be—should be plainly advantaged in that it is white in winter, why is it that there are still so many that have the disadvantage of being always black? Why are there so many crows? Why are there so many blackbirds? Or why is it that the female blackbird is not a black bird at all, but, on the contrary, only a very plain brown one? You that are so good for accounting for colours, explain to me about the black of crows, or the black of male and the brown of female blackbirds. Or is the question only indiscreet, and imprudent, as put to an ingenuity that has always a story to tell at any time?

But, seriously, why are canaries yellow? Why are larks and starlings spotted? Why has the robin the red breast that gives him his by-name? Selection! there is actually no selection. Neither on the part of nature, nor on the part of sex itself, is there the slightest proof of the necessary limit of selection. For selection,

in the very idea that constitutes it, means a limit. And limit there is none. Blacks, and whites, and blues, and reds, and greens, and yellows, are to be seen indiscriminately mingled, almost everywhere—blacks, and whites, and reds, and greens, etc., in almost every possible shading—nay, in almost every possible variegation, too! All that pretty anecdotical rationalising—story-telling—in regard to the leopard, too (the grandfather has it), is it not of the same kind? There are so many leopards in existence because their spots, confounded with the interstitial light and dark of the jungle, save them. But if that is so, why are there quite as many tigers, animals that are not spotted but striped? Oh, the ghauts, the ghauts, you cry. Well, yes, the ghauts are defiles; but how is a stripe like a defile, or how does it come from a defile, or as being like a defile how does it save them? But admitting that, and saying that leopards are saved by spots, and tigers by stripes, what of the lions? They can be saved by neither—neither by spots nor by stripes, and they are equally numerous, or supposably equally numerous—and *supposably so* is the vernacular of the region—why is there no call for either spots or stripes in their case? Or, after all, just as it is, spotless, stripeless, is not the lion quite as likely to escape detection in the jungle as either of the others, let it be leopard, let it be tiger? Its whelp is striped, Mr. Darwin says; but to what good? Or, leaving the lion alone, what of the elephant? Such a great, huge monster, with the gleaming ivory of his tusks, and the exposing peculiarity of his trunk, not to mention the betraying heaviness of his tread, and the bursting, rending noisiness of his march—why is it possible for any such uncovered animal to exist at all—if it is specially by reason of their coveredness that there *are* animals as lions, leopards, and tigers? Might we not use here,

and with quite as much reason as he—might we not use here, of the organic, Mr. Darwin's own words (substantially) of the inorganic, "It is sheer stupidity to bring forward any such insoluble problems"?

Even such an insoluble problem is this of colour—generally; as is most vividly suggested by what we are told in *Blackwood* for April 1890, article "Animals, Painted and Sculptured," by Mr. Frank E. Beddard, an expert, a well-known official zoologist. "Colour in the animal kingdom is due to two causes," he says, "either to the presence of colouring matters, of pigments, or to the presence of fine sculpturings which produces an optical effect of a certain colour." Of pigments he gives some curious examples, thus:—

"Its spines (those of the tree-porcupine of Brazil), which are greatly concealed by the hair, are bright-yellow-coloured—if the yellow colour is of any use, why should it be so carefully covered up?—the yellow spines when washed with warm or even cold water, become white—if it is unintelligible how the creature got its spines coloured in the first place, it is still more difficult to understand how it is that the colour is not a 'fast' one—it almost looks as if nature were playing a practical joke upon us.—Another example of a creature tinted with colours that 'run' is the touraco, and, according to one writer at any rate, the African trogons. A smart shower of rain is said to wash out the red colour from the wings of these birds, and we can confirm the truth of this—it is probable that the variously-coloured pigments are simply waste products, which happen, like the red exudation from the skin of the hippopotamus to be coloured, temporarily stored up on the skin, and ultimately got rid of. On this view we can perhaps understand why the red of the touraco's feathers and the yellow of the porcupine's spines can be washed out so easily. Here birds and insects have been generally referred to, while worms, and star fishes, and crabs, and such like, have been rather ignored.—A congregation of blue, purple, and red invertebrates, living four miles below the surface of the sea, cannot reap much advantage from being impressed by their neighbour's gaudy attire, even if they could see it, but they cannot see it, for the very good reason that, for the most part, they have no eyes, and if they had, it is too dark to see

—even among insects and birds the greater number are plainly coloured, and show no great difference of sex—in numerous marine creatures, whose mode of life renders concealment unnecessary, 'warning colours' are futile, and sexual coloration impossible, the frequently brilliant colours are entirely due to pigment deposited in the skin. On the other hand, in butterflies and birds, where sexual selection and so forth is conceivable, the colours are largely produced by mechanical causes affecting the structure of feathers or scales—the varying coloration of the common earthworm is due to different pigments, but the earthworm being blind as well as hermaphrodite, can have no leaning towards a male of a specially bright hue—the rook as he follows the plough is no respecter of anneloids' persons, and gobbles up all that comes in his way, brown and green, purple and red.—It is not too much to say that nearly all, if not quite all, birds in which the two sexes (as in the peacock) show a marked disparity of coloration, owe their brilliant hues to structural peculiarities of the feathers, and not to pigments.—But if this be so, how is it that we get so great a variety of tints among animals which are exclusively coloured by the pigments? The only answer to this question at present seems to be to say that there *is* no answer. The bile shows differences of colour in various animals, being green in one and yellow in another; the inside of one lizard's body is coloured deep-brown, of another it is not coloured at all; birds' eggs show the most varied hues, which, except in a very few cases, can be of no use whatever, as they are hidden by the sitting hen."

Instead of quoting many marked passages, I will just observe of so familiar a book as the *Natural History of Selborne*, that if any one will read it in this connection, he may be apt to find himself not by any means firm as a possible Darwinian in conclusion. So many things are double-sided. Thus, if we accentuated the differences that appear in the stock of horses which is said to split up into race-horses, etc., we only forget the fact that they are all horses still. In the same way, it is no doubt true that the foot of the tame duck becomes heavier, as its wing, possibly, lighter; and it may be all very well for Mr. Darwin to think of this in his own direction. Nevertheless, wild or tame, they are not the

less ducks. Even Dr. Carpenter here, in the interest of his own originality, is anti-Darwinian enough to point out that the *foraminifera*, however widely they diverge from their palæozoic originals, "*still remain foraminifera.*" Aristotle has got hold of a true principle in such cases, when he observes that essential parts are invariable, as the eye itself, but not its colour. When we think of certain shells which are about the most beautiful things in existence, we may be prompted to add form to colour as only an unmotived product on the part of an all-unconscious mollusc. Mr. Beddard remarks, as we have seen, that, in certain cases, "warning colours are futile and sexual coloration impossible;" and it would seem that, in reference to these shells, not colour alone, but form also is similarly situated, whether for the one selection or the other.

One cannot but be reminded here of the general method peculiar to Mr. Darwin by which he would seek to establish his conclusions. "There is an *à priori* theory," as I say elsewhere, "and then there is a miscellany of remark in regard to facts to support it." That, probably, is but the necessary result of committing oneself to the "scattering and unsure observance" of a common-place book's disarticulatedness. The attempt always is to bring the unconnected cases of the miscellany into something of coherency, by no more vigorous ratiocination than natural conjecture; at the same time that the very facts themselves are, in consequence of the manner in which they have been taken up, not always to be regarded as more than very loosely founded. We have already seen instances of this—stories which, by example of Plato, we have called stories for children; not that it is to be understood that they belong all of them to Mr. Darwin himself. Such stories as those that concern the spots of the leopard belong rather, so

to speak, to the camp (the leopard is to be found in the grandfather). It is from the camp that I think I derive the story of the hair on the arm growing downwards from shoulder to elbow, but just in the contrary direction from elbow to wrist, because our sometime ancestor stood in the rain with his hands folded over the head, although it is to be supposed that he might have run, poor devil, into his cave; or, indeed, it might be asked, How was it with him when he was yet on all-fours? Still there come a sufficiency of such stories from Mr. Darwin himself, as Hearne the Hunter, or say this of the conversion of a fish into a bird:—"Seeing that we have flying birds and mammals, flying insects, and formerly had flying reptiles, it is conceivable"—it is conceivable!—"that flying fish might have been modified into perfectly-winged animals."

This (*Origin*, p. 140) is a perfectly fair specimen of Mr. Darwin's usual ratiocination; and, of course, it may carry conviction home to most people who are contented with a picture for argument; but still, in strict logic it is no more than a gesticulation in the air. The fact is, that of the two judgments which are named by Kant, the one the "subsuming," and the other the "reflecting," judgment, it is Mr. Darwin's habit to use only the latter. He hunts, with that quick family imagination of his, for a *generale* to a certain number of *particulars*. He has first these latter, a mixed, disunited, plurality of particulars, which he cannot help seeing with an uneasy desire of unity; and as a universal or general rule or proposition really does not exist under which it (the plurality) or they (the particulars) would, as a matter of course, naturally and logically fall, he finds himself unconsciously driven to look about him for the discovery of one, or, in ultimate resort, at least for its invention. But such rule or universal being scarcely ever a true

universal—*i.e. the* true logical universal of the natural facts as logical particulars—has never the force of a *constitutive*, but only of a *regulative*, and, generally, very loosely regulative, principle. As we have seen again and again, the only principle *proper* to Mr. Darwin is accidental variation followed by a conjectural accidental selection. It surely stands to common sense that it cannot be well possible to point to any two principles that would be looser and more equivocal and insecure than these, not on any terms as constitutive, but simply as regulative. Keener senses than those of Mr. Darwin never existed; but, for all that, his imagination is keener still; and almost the products of the former become travestied into the products of the latter. Moses Maimonides (1135–1204), in his *More Nevochim*, complains of both Christian and Mahommedan writers, that, "in the realisation of their principles, they have not followed the nature of the thing itself; they have only considered how the thing must be, if it is to support their doctrine, and so then afterwards boldly asserted that the thing is so, and that it is so they drag all possible materials from elsewhere to prove—they confound for the most part imagination with understanding, and give the former the name of the latter. Everything might as well be otherwise than it is, absolutely no ground being present why each thing is so rather than not so." May we not bring these old sayings at least in illustration of much that we have here before us?

"I suspect (for I have never read it) that Spencer's *Psychology* has a bearing on psychology as we should look at it." So says Mr. Darwin once (ii. 265) to Lyell, and this is so far an acknowledgment on his part of other principles, modes of looking, than those usual in philosophy generally. That ordinary anecdotical manner of his, indeed, to call it so, reminds only of these old stories of the Middle Ages,

as of the fish clopias that becomes white under crescent, black under waning moon; or of the cuttle-fish, that, type of the condemned sinner, never rises from the bottom of the sea; or of the hyæna, that changes its "adulterous nature" every year, alternately male and female; or of the weasel, that, as type of unclean men, bears by its mouth. These are but examples of how it is that *the unreason of the common man degrades into myths the reason of the uncommon.* It is as Anselm complains of the Nominalists: "Their thinking is so involved in corporeal conceptions (*in corporalibus rationibus obvoluta*) that it cannot disengage itself from them." And it is such issues that Whewell has in view when he says that "they derive their origin and growth only from the dead body of true science; they resemble the swarm of insects that rise from the putrid carcase of a nobler animal."

Anything may be born of anything! That is really the outcome of Mr. Darwin with his x of organism, abstract organism, organism as organism, no matter particularly what, which he feigns between the two extremes of a past and a future, of neither of which he knows anything. There is a writer, Wolfgang Musculus († 1563), who speaks very much to this point thus: "God has in no wise permitted or commanded that anything should be born of anything (*ut de quolibet nascatur quodlibet.*). He has appointed the earth to be in a certain way the mother of all her products—but she must in no wise alter genera, or forms, or natural forces, or colours, or odours. Obeying God's command, she receives all creatures, and gives them back, even as she receives them. For a God of order is God, who has not willed that there should arise any confusion of genera, but that the species of each tree, vegetable, plant, with all properties there appertinent, should be kept in preservation." "She must in

no wise alter genera!" Nor yet have they been altered in the recorded memory of man. Whatever they may have been in the all-unknown, they are fixed now, and so have been always fixed, let us go back further than Rome, Greece, Egypt, India, China—to the "old artist" in the ice-age, or even beyond it if we can. Some two thousand five hundred years are not a yesterday; but when Solon, so long ago, referred to cocks, pheasants, and peacocks as ten thousand times more beautiful than the enthroned Crœsus in his robes, the said cocks, pheasants, and peacocks were manifestly pretty well the same cocks, pheasants, and peacocks that they are now. Of man or beast the relics of Pompeii monotonously bring to us only identity, and not one jot less the buried mummies that were gorgeously alive in Egypt centuries and centuries earlier. It has been already noted that the same dung-beetle that Mr. Darwin saw, Aristotle had already seen two thousand two hundred years before him. The latter could ask in his day, and we may ask in ours, why the nails of the fingers grow so much faster than the nails of the toes? why oil poured upon the sea composes it? why one end of an egg is harder than the other? or why *οἶνον οἴνῳ διαλύεσθαι* ("a hair of the dog," etc.)? He could tell us, too, that the Athenian boys knew how to quaver through paper on a reed, just as ours do; and no doubt the boys then, as they came out of the theatre from the representation of the "Frogs," shouted out, as they leaped over each others' backs, *brekekekex, coax, coax, brekekekex, coax, coax*, just as we may have known boys in London, or Liverpool, or elsewhere, similarly to leap and similarly to shout.[1]

[1] By the "old artist" of course we mean him who sketched animals on horn 240,000 years ago, as Darwinians assert. That old artist, evidently, was essentially the same human being that we are. If he could sketch them on horn, he had, doubtless, his dog then too.

The continuity in space is but as the continuity in time. There, too, there are identities, or self-identities, each in its place. "The infinitude of the universe" (says Kant, *WW.* vi. 208) "embraces within it with equal necessity every nature that its transcendent wealth produces; from the highest class of thinking beings down to the most insignificant insect, there is not a single member of them all indifferent; not one can fail without a break in the harmony of the whole which consists in its community." "Indisputably, in the highest idea of reason," says Schelling, "the plant is predetermined; from idea to plant as necessary moment of it, there is a continuous progress."[1] Plants and animals are considered by Erigena under the point of view of two different stages of the realisation of one and the same universal life. Of that universal life the *esse, vivere, intelligere* of the Middle Ages are but the natural unfoldings. There is but a single scene of reason, let contingency ramp as it may. Did the earth not rotate, for example, one half of it were frozen into futility as the other half to a like effect scorched. Mr. Darwin's sinuosities of accident, accumulations of chance, beside the eternal presence of all-pervading purpose!

The tubercle he sees in the ear—proof of the original brute! Three pages, with an actual drawing, are devoted to this in the *Descent of Man.* A minute, almost imperceptible, inconstant nodule in the circumference of the external ear, this shall be but the original bestial ear-tip, only "folded in." Of another peculiarity in the ear he says this—just in passing: "It has been asserted that the ear of man alone possesses a lobule; but a rudiment

[1] How Mr. Darwin himself laments that quite a quantity of good food should be lost by disturbance, on the part of man, of "that *chain* by which so many animals are linked together"—see back *à propos* of certain *stercovora*, at pp. 81, 82.

of it is found in the gorilla (*Mivart*); and, as I hear from Professor Preyer, it is not rarely absent in the negro." The lobule, as peculiar to man alone, has been long an understood fact; it is Mr. Darwin himself signalises the tubercle. They are the arms of the finger-post, and point contrariwise. What might secern man, Mr. Darwin almost ignores; but what would fling him to the beasts, inconstant and evanescent as it is, he cannot make enough of. Voltaire exclaimed of Rousseau and his *Discours*, "Never has there been so much wit expended to make beasts of us—one feels actually inclined to run on all-fours!" A hundred years later in date, any such exclamation would only have become a hundred times more relevant, had Voltaire lived to read Darwin.[1]

[1] That Mr. Darwin, with more than microscopic eyesight to the tubercle, is purblind to the lobule, is less art than self-deception to wish. There is a tint of slyness in the *Mivart*.

CHAPTER XIII.

CRITICISM OF NATURAL SELECTION—THE BOOK ON THE "EMOTIONS."

MR. DARWIN is one of the few men who, since Linnæus, are of Linnæan fame. Even in botany, which is the express Linnæan field, Mr. Darwin's observation—and observation, again, is the express Linnæan faculty—is not by any means at its weakest, but, on the contrary, perhaps, almost keener, stronger, truer than anywhere else since the time when he wrote his *Journal*. Nevertheless, natural selection is Mr. Darwin's historical standpoint, and to that we confine ourselves. If we omit consideration of botany, however, it would hardly be right to conclude without a word on the specially relevant work that is named *The Expression of the Emotions in Man and Animals*.

What is called education, civilisation, progress, is largely artificial; and if there is anything that can still be called *nature* in man, it must lie as close as possible to his simple animality. Now that, plainly, is his instinctive expression of feeling; and so it was that the subject as a whole was in place for Mr. Darwin, who seems to have turned at once to his own domestic hearth as a field of observation. "My first child was born on December 27th, 1839, and I at once commenced to make notes on the first dawn of the various expressions which he ex-

hibited." This "at once," in the circumstances, jars; but it must not be supposed to precede or preclude, in such a man as Darwin, the awful new joy of fatherhood over his first-born, a male. "I felt convinced," he goes on to say (i. 95), "even at this early period, that the most complex and pure shades of expression must all have had a gradual and natural origin." In a word, even at birth, he would see in the babe the brute. And yet the very first note of expression in his child—crying—had never possibly a prototype in any brute that ever was born!

It is thus Mr. Darwin commences. Nevertheless we still agree with Dr. Krause that the subject as a whole was in great part a suggestion to the grandson on the part of the grandfather (see *Zoonomia*, say i. 140–180). To the latter, for example, we have fear and its manifestation in this way: The new-born infant feels oppression for breath, and is struck by cold. It breathes short, it trembles; and fear is the expectation of similar disagreeable sensations afterwards. The tears and snivelling at birth, too, result from the action of the air on the lachrymal sac. Hence it is that we contract the forehead, bring down the eyebrows, and use many other contortions of the face to compress the sacs, establishing in this way the permanent language of grief. Still, with the child at birth, there is more than pain concerned; there is also pleasure. There is the warm, soft smoothness of the breast, and there is the fragrance of the milk. The latter tends also to irritate to tears. "Hence the tender feelings of gratitude and love, as well as of hopeless grief, are ever after joined with the titillation of the extremity of the lachrymal ducts, and a profusion of tears." It is in a like spirit that lambs are spoken of. They "shake or wriggle their tails, at the time when they first suck, to get free of the first hardened

fæces." "Hence this becomes afterwards a mark of pleasure in them and in dogs, and in other tailed animals." As for cats being different, "these animals having collar bones use their paws like hands when they suck, which dogs and sheep do not." Why cats purr, is that they draw in their breath, which is a resemblance to their manner of sucking. A smile, as we have seen, is the expression of our first satiety. We jar our teeth always when we hear certain sounds, from our early biting of the cup or glass that was forced to our lips with medicine!

It needs only a very cursory examination of the book to assure us how very similar the grandson is to the grandfather in precisely such like physical moralisations. We have this (p. 46), for example: "Kittens, puppies, young pigs, and probably many other young animals, alternately push with their fore feet against the mammary glands of their mothers, to excite a freer secretion of milk, or to make it flow." This first instinctive serviceable action leads, by mere repetition, to the establishment of that strange custom in cats to pound with their fore paws any soft substance on which they may chance to stand.

This is a perfectly normal specimen of Mr. Darwin's main doctrine in regard to expression. As one sees without difficulty, there may of course be other interpretations of the facts. Most people would be inclined to say that the movement of the paws in sucking was simply an unmotived and spontaneous manifestation of pleasure; but it is at once to be noted that it is the very character distinctive of Mr. Darwin, that he will have no such unmotived action. That there was this pawing on the part of kittens at first was not meaningless to him; it was to push the milk, and hence the subsequent custom. Is this so certain? Had a kitten,

a puppy, or a pig ever so much knowledge in its instinct, to say so, as even blindly, mechanically, to contemplate the effects of a *squeeze?* Then, do the other animals, dog, pig, etc., like the cat, *pound?* or why does the cat itself, even while pounding, stick its claws into the soft substance and lift, or even tear it, with them?

Mr. Darwin brings in, precisely in the same sort of way, our old friend the dog who must always turn himself round and round to trample down the imaginary reeds that baulk his couch. It is difficult or impossible actually to enter into the dog's mind to discover why he acts so; and he certainly does not always act so. I am sure I have seen a butcher's dog flop down quite contentedly against the wall at the side of his master's door; and I am also sure that I have seen a grocer's dog similarly sink down without a turn, and equally contentedly, on his master's doorstep. I have likewise seen an old horse on a common turn, and turn again, and yet again, before trusting his flank to the grass. In fact both men and animals find it natural to fall on some facilitating preliminary before coming to an act. Did ever anybody see a man cross a street at right angles—unless he had to look to his footing? Animals necessarily crouch before a spring, just as we take a run before a jump; and that is just what determines one of two dogs who are going to meet, to lie down. So far Mr. Darwin is in accord; but does he not see farther that the latter dog so acts only by the way of playfully *seeming* surprise, knowing well all the time that there is never a pretence of concealment for either the one or the other?

Why, then, all these elucidatory *ambages*, seeing that explanation by direct first intentions is much more satisfactory than by any indirect second ones? So it is with the pointer's uplifted paw,—with cats and dogs

covering up their excrement,—rolling themselves on carrion, or scratching themselves,—with horses nibbling each other, pawing for the start, etc. In fact, all about the attitudes of dogs and cats, either when in rage or in submission, in joy or in fear, ought perhaps just to be taken directly. If a dog that will not fight throws himself on his back and turns his belly up, I have seen a man, in similar circumstances, act precisely in the same way—whom, in fact, no power could *kick up*, though it was tried! What need of an ancestor in either case, to such direct expression of such direct feeling? Cowardice, doubtless, so prompted a myriad of years ago; and cowardice, no doubt, will even so prompt a myriad years hence. Nay, for the dog, here is quite another interpretation, on the part of an expert, too:—In *Temple Bar* for June 1893, at p. 178, occur these words: "Fritz, on the contrary, the amber-eyed dachshund, all tail-wagging, and smiles, and saliva, had made himself cheap at once, and had even turned over on his back, inviting friction where he valued it most, before he had known Diana five minutes!"

Such moralisation as this in regard of cat and dog, etc., I suppose we may consider pretty fairly to represent the general spirit of the book. So, in respect to a nod of the head in affirmation, and a shake of it in negation, Mr. Darwin will have, as the first of the former, the child's stoop to its food in acceptance, and equally, as the first of the latter, the child's wrestle back against it in denial. But, really, for explanation in either case, is the roundabout by an ancestor necessary?

Now, I do not think it required of me to go any farther into this species of material. He who opens the book will readily see for himself, in picture and in print, that most of our natural expressions of feeling are all similarly dealt with. I will only name, so far,

in contrast, the explanations in such like references of another school—with the hope that these latter will, on the whole, show as the more satisfactory:—

"It would be well to resume and treat in a special science—a psychical physiology—the system of internal feeling in its external embodiment of special expression. How it is with the agreeable and the disagreeable, for example,—with the symbolical signification of the various colours, tones, odours, flavours,—with the reference of anger and courage to the blood and the breast, of thought to the head, of care and anxiety to the deeper vitals,—with the production of tears, cries, sighs, laughter, etc. Or how it is that feeling is beneficial, injurious, or even fatal; how cheerfulness promotes health, and apprehension undermines it: how grief in overmeasure, or too sudden, may cause insanity or death; but how the man of stronger character, nevertheless, is much less exposed to such effects than others weaker, inasmuch as he has made his internality much more independent of his externality, and has won for himself a much firmer support from within than a more ordinary man, who, poorer in thought and in will, has not the strength to endure the negation of a violent evil suddenly breaking in upon him. Further, how the external *embodiment*—of inward feeling, that is—the objectivisation of it, removes it, cancels it, as we see take place in the making of the affected person laugh, still more in the affected person himself giving way to weeping, sighing, sobbing—the *relief* of weeping, etc., as it is called—generally, indeed, to sheer ejaculations of voice, independent of speech. To bow the head indicates an affirmation, for we signify thereby something of subjection. The bowing of Europeans is only from above: they will not yield the independence of themselves. It is the Oriental who prostrates himself before the superior,

dares not look him in the eye, dares not so maintain his personality before him; while he again, the superior, has the right from above to look the other, his inferior, all over. To shake the head is to gainsay; for we mean to throw into movement thereby, to controvert and reverse. To throw the head up signifies contempt—the lifting of one's self over another. To turn up the nose is disgust as at a stench. To wrinkle the brow is to concentrate one's self in wrath. We make a long face when we are deceived in our expectation, for we feel then as though *parted* (sundered, dissevered). The most expressive movements have their seat in the mouth and its neighbourhood; for from the mouth is speech with its infinite sinuation of the lips. As for the hands, to throw them up over the head when astonished, is in a certain way to try and lift one's self above one's self. To put hand into hand on a promise is a making to be at one. The movement of the lower extremities, too, the gait, is strikingly indicative. One's walk, above all things, must be one of education, cultivation, refinement —the soul must announce therein its dominion over the body, the exaltation of reason over sense. But not only refinement and rusticity—also, on the one hand, carelessness, affectedness, conceitedness, hypocriticalness; and, on the other hand, orderliness, unassumingness, sensibleness, simple heartedness: these, too, express themselves in the peculiarity of the walk, and we easily come to distinguish the person and the personality by it."

To compare the two modes now before us of looking at expression, is to be struck, on the one hand, with a sense of externality—surface, and, on the other, with a contrasting sense of internality—depth. At the same time those who have hitherto accustomed themselves to the outside only, will feel themselves anywhere but at home, doubtless, when asked to come over to the

inside. This, however, must here be plain to themselves, that they cannot see into everything from the outside. When we put hand into hand on a promise or a bargain, for example, what ancestor of ours among the brutes shall we summon in proof of the inheritance of a custom, or of its origin in mere animality and sense? May not there be extended application of this question, too? and may we not hope that a feeling of the commonness and shallowness of the outside position will abide?

Is it quite certain that the dominant spirit which we see everywhere around us, in the new world as in the old, in religion as in politics, in philosophy as in current intelligence, etc., is not to be traced to the abettors of the mere outside, the Mills, the Grotes, the Buckles, ay, and the Darwins, to whom alone we have listened during these last forty, fifty, or less or more years?

We turn now to the main interest—the special bearing of the emotions on the principle of natural selection. Only, first of all, as medium of transition here, and, at the same time, as excellently illustrative of Mr. Darwin's physical reasoning, we shall venture to call attention for a moment to what (p. 93 *seq.*) concerns the porcupine.

Porcupines, we are told, "rattle their quills and vibrate their tails when angered." These rattling quills, it appears, are only *on the tail.* Short, hollow, thin, open, supported on a slender footstalk each, they strike against each other and rattle when the tail is shaken. Mr. Darwin says further here: "We can, I think, understand why porcupines have been provided with this special sound-producing instrument; they are nocturnal animals, and if they scented or heard a prowling beast of prey, it would be a great advantage to them in the dark to give warning to their enemy what they were, and that they were furnished with dangerous spines; they would thus escape being attacked." It is curious how Mr.

Darwin must always reason through the conjectural stories which he imaginatively gives himself to tell. But may we not also, equally imaginatively, conjecture some very different issue, or even a score of such? Even as Mr. Darwin tells the story, it would be the "enemy," the "beast of prey," that would be advantaged —as warned *not* to make an attack where it would certainly only be injured. But to take it reverse-wise —it is, Mr. Darwin tells us, an "enemy" that is concerned. Well, what enemy that knew by its rattle where its "prey" was, and could come upon it by surprise and in the dark, would magnanimously consent to spare it till daylight, when it itself (the "enemy") would necessarily have all against it which it had then and there for it? Really, when would Mr. Darwin wish us to suppose that this particular "enemy" seeks this particular "prey"? For, of course, the porcupine is like the rest, wholly in the drift of the struggle for life.

We have to bear in mind, too, that, while the porcupine is in itself a very harmless, vegetable-feeding animal, it is only at night that its enemy is likely to fall in with it, for it is hidden asleep in its impregnably defended subterranean fortress during the day. The rattle "a great advantage in the dark!" Why, *but* for its rattle, would it not be most likely altogether to escape its "enemy" in the dark? And yet to Mr. Darwin it is precisely *for* this "great advantage to them in the dark" that "porcupines have been provided, through the modification of their protective spines, with this special sound-producing instrument"—an advantage which, as it turns out, can stead it in the second place only by steading its enemy infinitely more in the first place.[1]

[1] It is worth pointing out that here, even to Mr. Darwin, a provision in one animal is certainly for the advantage of another.

Very curious all that to the *raison d'être* of natural selection! The usual relation to the process of natural selection is also implied in that sentence (the last quoted about a protective "provision" through "modification" of protective spines into a protective rattle)—but only to the thickening of the contradictions. The porcupine is one of the strangest animals in existence; it is covered with the most curious variegated horny quills, which, being pointed, can be erected by the creature and constitute its defence. I am almost tempted to feel sure that not even the all-powerful ingenuity of a Darwin could, simply for the spines as the spines to begin with, start a theory of natural accidental variation, followed by natural accidental selection, that would account for the natural birth and development of these extraordinary provisions. It is not to that, *the fundamental evolution*, however,—it is not to the spines that Mr. Darwin alludes, but only to the "modification" of them into the tail-rattle, at the same time that he unmistakably points to the advantage of the rattle as the *raison d'être* at all of the formation of it. In consequence of the *advantage* to the creature in the dark, it gradually attained in its tail to a *modification* of its "protective spines," which came, more and more, in that situation, to sound like a rattle when, in a vibration, they clashed.

Now, considering the tameness of the animal itself, the food it eats, and the peculiarity of its total existence, I cannot for the life of me imagine, as Mr. Darwin allows me to say, what possible advantage of any first faint accidental sound in its tail — leave alone how

Mr. Darwin is understood to have laid down the rule "that no creature could have an organ that was useful to any other animal than itself." See *Origin*, p. 159 *sqq.* To say "exclusive" good, as on p. 162, is wofully to hedge: of course the rattle is not an exclusive good to the others; the porcupine itself has its share in it.

possibly accidentally begun—could have come to end only in such extraordinary and equivocal peal of bells, as it were, at the last. Of course to me, too, the porcupine is not an express supernatural stroke of technical manufacture, but a product of Nature, just like everything else that is within her bounds; and if you ask me particularly *how*, I have to confess that I have no special receipt in that direction, though I may possess such general philosophy of nature as leaves me on the whole at rest on the question—assured of this, too, that, if ever you are to account for the *how* by the methods of the understanding, you will certainly never account for it by what is called natural selection. Nay, may not this one example in the case of the porcupine be allowed to be exactly typical and crucially determinative of the single position that is involved in the entire Darwinian hypothesis? There is the peculiar *advantage*, and there are the peculiar materials, the spines, out of which alone, plainly, it (the advantage, the rattle) is no more than a *modification*, if ever modification was—now, how did it all happen?—how did the modification come? We have considered how it might be, if the rattle were conceived to *attract*. Mr. Darwin plainly intimates, for his part, as we have seen, that the rattle, giving notice of the spines, would, on the contrary, *repel*—warn any enemy off. But if it would be absurd for a vegetable-feeder to rattle for an enemy in the dark, *repulsion*, the explanation of Mr. Darwin, hardly lessens the difficulties involved. In view of the struggle for existence, it at once strikes us, for example: This impregnable animal, how is it then so rare? See how infinitely abundant the dandelion is through its feathered seeds; but the porcupine to Mr. Darwin is even more favoured as an animal than is the dandelion as a plant! Moral: the whole earth ought to be overrun with porcupines.

It is in such an example as this of the porcupine that we see the veritable purpose of the book itself. The rattle of the porcupine's tail is an expression; and therein lies a proof of natural selection. Such an expression is an advantage to the animal; and this advantage, a result of mere accidental or natural variation in the first place, was gradually improved by a process of selection, equally accidental, equally natural, in the second place, through ancestor after ancestor, during the infinitude of time, into the full-formed implement we see. The first individual that discovered the advantage of a sound in its tail—its spines otherwise, being necessarily already, so far, to the fore (but how we know not)—would make a custom of it, and this custom passing over into the race can, in propriety, be only named *inherited habit.* This, then, is the theme of the book. The prevalence of inherited habit shall be illustrated into a demonstration of the truth of natural selection.

CHAPTER XIV.

CRITICISM OF NATURAL SELECTION—THE BOOK ON THE "EMOTIONS"—CONTINUED.

WE have just specified the particular theme of the book; and its own earliest pages will amply suffice to verify as much in the words proper of Mr. Darwin himself. Such words more particularly occur in his references to Gratiolet, towards whom, as an opponent of natural selection, he feels, no doubt, just a little sore. Gratiolet, as he snaps, "seems never to have reflected on the principle of evolution, but apparently looks at each species as a separate creation;" but "by this doctrine anything and everything can be equally well explained; and it has proved as pernicious with respect to expression as to every other branch of natural history." He, for his part, knows better: "some expressions can hardly be understood, except on the belief that man once existed in a much lower and animal-like condition:" the community of such expressions in man and certain animals is only rendered intelligible to us, "if we believe in their descent from a common progenitor." Might he not quite as well have said, the fact that both men and midges drink can only be explained to us by their descent from a common progenitor?

Gratiolet, Mr. Darwin further complains, "appears to overlook inherited habit, and even to some extent habit

in the individual: and therefore he fails, as it seems to me, to give the right explanation, or—any explanation at all." That is, there can be no explanation at all, if you go directly to work like Gratiolet, and not indirectly like Mr. Darwin himself. It is not enough just to point to the "*traduction*," translation of inward sentiment into outward expression—we must turn our eyes from what is immediate, and look away off to habit. The outward expression is not to be considered as a mere natural sign, dependent on the very constitution of the organism concerned. Habit has intervened. The present movement of expression may, as a movement, be useless now; but once on a time in a far back ancestor that movement was itself an action, and an action so useful then that it has become in reflexion hereditary now. Mr. Darwin quotes an illustration of Gratiolet. At billiards a player, after his stroke, especially if in any way unsatisfactory, may be seen to follow his ball not only intently with his eyes, but actually with his head and shoulder, as though bodily to push it into the direction wished. Now this will appear to most people, as it appeared to Gratiolet, mere symbolism. No one, I should say, is apt to think twice when he hears the player mutter over his ball, "go left, you little beggar," or "right, you little beggar," or "quicker, quicker, you little beggar!" All seems so natural, so single,—that he has never a dream of a double. It may actually cause astonishment to hear Mr. Darwin find no explanation for what seems so simple and direct, but habit! "When a man," he says, "sees his ball travelling in a wrong direction, he cannot avoid, from long habit, unconsciously performing movements which in other cases he has found effectual." Is this necessary? What is the use of having recourse to habit in such a simple case at all? When I strop my razor, I may move with it,—is that

habit? I suppose, then, the synchronism of neighbouring clocks is habit too! If a man, for his cigarette, strikes a match on his boot at table—is that habit?—must it even be imitation? Rather, is it not natural for every man who feels the want, and even as he feels the want, just at once to resort to the expedient? Can any one fancy that the suggestion to himself was a matter of habit, or did it even need example? May not a man unnecessarily waste his reason?

Mr. Darwin remarks here further, "Dogs during many generations have, whilst intently looking at any object, pricked their ears, and conversely," etc.; but is it only "long-continued" habit has enabled them to do this? Is it really to be said that the attitude of attention—a strain—is not as natural to an animal as the use of his eyes to see, his ears to hear, or his feet to run? Or if it is really due to habit, where did the first organism that ever assumed it get it? Habit can do much to strengthen and promote; but when did habit in any case prove a first?

It will strikingly illustrate the fallaciousness of all such inferences from mere commonplace-book collection, to remind ourselves of the two interpretations of the dog's throwing itself on its back and turning its belly up. Mr. Darwin sees prostrate submission in the attitude; Mary Cholmondeley, the writer in *Temple Bar*, saw, on the part of the "amber-eyed dachshund" in the same position only an invitation to "friction where he valued it most." And which interpretation, if indeed either, is to be accepted as the right one, who shall decide?

Mr. Darwin, regarding strain in the dog as, so to speak, *thesis*, would explain the opposite of strain, submission, by the opposite of thesis, "the principle of *antithesis*," namely. If contracted muscles express such and such emotional state, then it will be natural for an

opposite emotional state to express itself by muscular relaxation. But there may be a difficulty in deciding which state shall be first, the thetic or the antithetic. Mr. Darwin makes the former first, and the latter only secondary and a consequent. But surely it is as natural for a dog to sleep as to fight, quite as natural for him to lie down as to stand up; and so, consequently, quite as reasonable to make the relaxed muscles thetic to the contracted ones, as these thetic to those. Or in all these cases have we not just such and such action merely natural to just such and such an animal? Surely it is a strange mania that a man, because of natural selection, shall not be able to take a simple fact simply as it is. Must all be secondary and between—nothing at first hand and for itself? Suppose we invent a story about why the dog puts his tail down! It would be quite as easy as why he puts it up.

And suppose we do accept said remote progenitor as the true First, and all as mere habit between, where are we to find him—how far are we to go back for him? To say nothing of the "warm little pond" now, Mr. Darwin certainly goes back himself to "four or five primordial forms" or even a "single prototype" (ii. 329); but single prototype, or any one primordial form, he never shows us either. Still, either, be it form, be it prototype, is, by the very term, an organism. But an organism has, even as an organism, a structure proper to it, and a life; and as, whenever it was, it was such, an express entity and not a null, it must originally have had an external manifestation, an expression, *en rapport* with this structure, *en rapport* with this life. Such manifestation, such expression, such direct natural attitude, is assumed as at once intelligible *then*, what has happened that it has lost its right to be at once intelligible *now?* Mr. Darwin can allow, and does

allow, "direct action of the nervous system." He just postulates, in fact, direct action of the nervous system, direct action of structure, when he postulates any one of his primordial forms, or his single prototype itself. And so, one can see no reason why structure should not have an equally direct action now. If the externalè was *en rapport* with the internalè then, why should there not be the same *rapport* in the case of both now? If there is evolution *into* something, there must have been evolution *from* something. That, of course, is but the one ever-present Darwinian position. But to say evolution, evolution, is to explain nothing, is only to fire into the air, unless there be assigned the *what*—the what that was original and first. Any claim of merit for such perpetual removal and removal as an explanation—of expression, that is—were simply a fraud.

A beginning is necessary, then, a first, a what; and any mere reference to prototype or form, were, even for expression, no first, no beginning, no what, but only a removal. But what of "the warm little pond"? As this necessary unremoved first, will *it* stead us? Ah, —all of the physical side will exclaim—this is the goal, the aim, the "unimaginable lodge" of all our thinking at last—could we but get at it!—Well, you have not got at it, but suppose you have, will it answer the purpose required? Even for expression, will the material elements at last—oxygen, hydrogen, carbon, lime, soda, potass, iron, sulphur, phosphorus—as an explanation suffice? To you, they ought, for to you they are the ultimate and sole constituents of which you are composed. I fear it will task more than the ingenuity of a Darwin to see the ultimate of a smile in oxygen or of a frown in carbon; and here on the metaphysical side, I, for my part, refuse the attempt. I believe the organic to be, *directly*, quite as much an

affair of nature as oxygen itself or carbon either. I cannot *begin* with the inorganic, as though the organic were but its consequent, its accident. For that demonstration were necessary—demonstration of the actual transition of the one into the other, of the inorganic into the organic—but any such demonstration is as yet not. As said, it were to Mr. Darwin, and the many that think as he, the goal, the aim, the "unimaginable lodge;" but it is as yet in the waste, and no more than a Fata Morgana in the waste: it may "dodge conception to the very bourne of heaven, but it leaves the naked brain at last!"

It is a necessity of Mr. Darwin's own, then, that he *commence* with an animality of some kind, let it be of whatever kind it may. It is also a necessity of Mr. Darwin's own that expression with that first animality be *direct* (some one thing or other must be original and prime).

But, as again and again said, what occasion is there to refer all expression *now* to that expression *then?* Why should expression not be direct still? If it were so—if it were direct still, the wonder—supposing there were wonder, ought to be no greater now than it ought to have been then.

His predecessor Hume did not teach as Mr. Darwin teaches. "We must first show the correspondence of *passions* in men and animals." This is said by Hume (*T.* ii. i. 12); and it seems so much mere repetition on the part of Darwin that one might be forgiven if one speculated on an influence from the one to the other, from the former to the latter. Certainly Mr. Darwin expressly puts forward precisely such correspondence as his sole object in dealing at all with the subject of expression. But Hume, unlike Darwin, takes the animals even now to express themselves directly. "The

very port and gait," he says, "of a swan, or turkey, or peacock, show the high idea he has entertained of himself, and his contempt of all others. This is the more remarkable, that in the two last species of animals, the pride always attends the beauty, and is discovered in the male only. The vanity and emulation of nightingales in singing have been commonly remarked; as likewise that of horses in swiftness, of hounds in sagacity and smell, of the bull and cock in strength, and of every other animal in his particular excellency. Add to this that every species of creatures, which approach so often to man as to familiarise themselves with him, show an evident pride in his approbation, and are pleased with his praises and caresses, independent of every other consideration. Nor are they the caresses of every one without distinction which give them this vanity, but those principally of the persons they know and love; in the same manner as that passion is excited in mankind. All these are evident proofs that pride and humility are not merely human passions, but extend themselves over the whole animal creation."

One sees here more than one point of difference between two men not otherwise unlike in their adherence to the eighteenth century enlightenment (*Aufklärung*). Habit, hereditariness, is not for a moment thought of by Hume. The expression of pride, vanity, emulation, is primary and direct. Sexual selection he never dreams of in regard to the peacock; and there is no call to him for any *ambages* as to the origin of the dog's feelings for man. Nay, Mr. Darwin himself did not, in the general reference, at all double things in this way when he was in the Galapagos. Of the huge lizards he says (*Journal*, p. 388): "I watched one for a long time burrowing in the soil, till half its body was buried; I then walked up and pulled it by the tail; at this it was greatly

astonished, and soon shuffled up to see what was the matter; and then stared me in the face, as much as to say, What made you pull my tail?" Surprise here, evidently, was as natural to the poor brute as the very feet it dug with, why should it not express it, and at once from its own self? What should a reference to any ancestor do for it? Its "common progenitor," doubtless, would have done no less; but can it be for a moment supposed that such progenitor actually *bequeathed* such mode of testifying surprise? The expression was simply in natural and native *rapport* with the natural and native feeling. With that *rapport* there really seems no occasion whatever for referring to habit and hereditariness. No doubt, the hair bristled up in our common progenitor in terror, just as it does in ourselves. This was to Mr. Darwin a voluntary act then "to make the animal appear larger and more frightful." But surely, in that case, a very different brute from ourselves the common progenitor must have been; for such scalps as ours, or even such scalps as the monkey's, are scarcely calculated to rise high enough to scare a dog or a cat, much less a lion, a tiger, or an elephant. In these stories of his, Mr. Darwin generally takes—in agreement with the cookery books—as much as may be required. It would take more hair than what either possesses, to make man or monkey perceptibly bigger by the bristling of it. The hair of my flesh stood up; fear came upon me, and trembling which made all my bones to shake. If Eliphaz the Temanite with all that did not look "frightful," he must certainly have looked frightened. In short, it is simply the physiological effect of fear to excite a feeling of shivering and cold, and hence the creeping of the skin with the consequent bristling of the hair. A voluntary act in any animal ever at any time! What other imagination than that

of Mr. Darwin could ever have strung itself to so vast a difference? Why, even the grandfather's reasonings from the effect of cold at birth have more reason in them. Is it not a stretch of imagination, too, to explain the dislike of cats to the wetting of their feet by "their having aboriginally inhabited the dry country of Egypt"? Where, then, were the poor brutes during the Nile overflow, and all the time the pigs were trampling the seeds into the wet mud after it? Cats cannot stay shut up in houses; they must visit one another. Originating in Egypt, then, we should expect them to be both excellent swimmers and excellent mud-waders.

The genealogy of the talent of a Beethoven or a Mozart, Mr. Darwin finds in the early wooing of man: "I maintain," he says (p. 87), "that the habit of uttering musical sounds was first developed as a means of courtship in the early progenitors of man." I really should not have wondered much if Mr. Darwin, in the implicitness of his faith, had declared the smell of ammonia to be inherited, and the stink of excrement merely a habit. I suppose we stretch ourselves by inheritance, stamp our feet by inheritance, yawn by inheritance, and by inheritance sneeze. In fact, as much is directly asserted (p. 40): "It is probable that sneezing and coughing were originally acquired by the habit of expelling, as violently as possible, any irritating particles from the sensitive air-passages." How then is it, in the case of a sneeze, that the air is not first violently expelled, but that, on the contrary, it must, first of all, with even preternatural violence, be suddenly drawn in? Irritating particles for the air-passages are most likely to be found there at times of eating: were the spasmodic draught of air to go through the mouth then, it would even sweep a *bolus* into the trachea

and the most of us would die. What a vast mass of human beings may have been choked off, as suggested already, before the survivors, through natural selection, had attained in sneezing to the exclusive use of the nose!

I do think that it is with a certain pride of originality Mr. Darwin applies all this in explanation of reflex action. Reflex action, in truth, shall be to him only inherited habit. Coughing, sneezing, etc., were first voluntary acts; but they are now involuntary, reflex, simply by habit. Nay, Mr. Darwin is daring enough at least to *insinuate* that the action of the eye under light may really be of this nature—though "a movement which it appears cannot have been at first voluntarily performed, and then fixed by habit!" But, in fact, it is the very principle of natural selection that an advantage once felt is not left idle, but is put to use! "Beneficial variations tend to be preserved and inherited:" and that again is the whole of Mr. Darwin's philosophy; which sums itself in a phrase, just as Sangradoism did in bleeding and warm water! As is his usual way, Mr. Darwin in his great candour, of course, is always prompt to call attention to what at any time may appear to be exceptions to—"the philosophy of the subject;" not but what he would be ready to admit that there may be occasions when the exceptions are the rule and the rule the exceptions! No doubt, also, Mr. Darwin must have taken serious lessons in physiology before trusting himself to give light on these subjects. It is probably only the fault of professional and practical drill if the "vaso-motor system," and the "cerebro-spinal axis," and the "pneumo-gastric nerve," and other technicalities the like, not unfrequently referred to by Mr. Darwin, should appear a little awkward, as though they lay in unaccustomed hands. But then

Mr. Darwin's medical studies are cheerfully to be borne in mind.

On the whole, we have to recollect this, that there is but one purpose in the book. If you scratch the apparent Frenchman that the modern Russian is, it is said, you lay bare at once the Tartar; so Mr. Darwin, by a scratch, would discover the monkey in the man. One can scarcely say that he has succeeded in this. But, by the same rule, I wonder if any scratching would bring to sight the bushy bruin that must be hidden in the hairless whale. It ought to, if we are to listen to Hearne the Hunter story—especially since Mr. Darwin himself assures us, in the case of another such conversion, that "inheritance would retain almost for eternity some of the original structure" (ii. 335).

And with this we must conclude in regard to the book on Expression. There may be those to whom all these pictures, with text, about expression proved something new, instructive, and entertaining; but can it be pretended that the information provided was really worth the purchase of 5267 copies in a single day, the first of the sale?

We have spoken of the latter half of the nineteenth century as likely to prove the most remarkable period in all English history for the feebleness of its thought; and surely if we reflect deeply, there can appear no want at least of a considerable number of relative proofs, so far as writing is concerned, philosophically, politically, even poetically. Tennyson sold well by merit, as Browning did not; but what of the sale of Tupper by favour?

And, after all, perhaps we are not much worse off than our forebears—perhaps it was always so. At all events, we have always open to us this consolation: That, even at the best of times, we are "mostly fools"

(Bias, Heraclitus, Aristotle, Cicero, Kant, Carlyle, Oxenstiern)!

Rabelais: "En toutes compagnies il y a plus de fols que de sages."

Frédéric le Grand: "Ah mon cher Sulzer, vous ne connaissez pas assez cette maudite race à la quelle nous appartenons!"

CHAPTER XV.

CONCLUDING CONSIDERATIONS.

WHEN theory is brought face to face with fact, the one may at times only throw a doubt on the other: we ask, Could ordinary variations, as from day to day we see them, followed, too, by whatever supplemental application or selection it is possible to invent, ever even conceivably produce (in some certain case) that so extraordinary structure? We cannot always reanimate conviction, in the manner of Mr. Darwin, by the simple expedient of an imagination that is in an endless gradation throughout an endless past. No doubt you may produce anything you like in that way. With gradation enough, and imagination enough, and time enough, I know nothing to hinder the poker from passing into the tongs, or into the shovel either—so far as speech goes. It was on these terms, as we saw, that Mr. Darwin contrived to reassure himself in regard to the porcupine: "We can, I think, understand," he seemed easily to say, "why porcupines have been specially so provided;" whereas we, for our part, precisely failed in this. For us, on the contrary, why these creatures should hoist a signal to the enemy, develop a provision in themselves that in the first instance was not for themselves but only altruistically for another, remained an enigma. And when theory is contrasted with fact, there are

innumerable enigmata such: of which we can only adduce some.

In a paragraph headed "A Rare Blooming Flower," the *Scotsman* of 27th August 1889 begins thus: "There is now in full flower in the hothouses at Hamilton Palace gardens a fine specimen of the *Eyuca Gloriosa Variegata*, said to blossom only once in a hundred years." Here, I fear, there is something quite hopeless, whether for Plato or Aristotle, for Kant or Hegel, for Newton or Laplace, for Linnæus or Cuvier, or even—for Darwin!

On the 8th of the succeeding October there appeared in the same newspaper a paragraph from which I extract as follows:—

"A French paper, *Les Mondes*, gives a fascinating account of a newly-discovered flower, of which rumours have from time to time reached the ears of floriculturists. It is called the snowflower, and is said to have been discovered by Count Anthoskoff in the most northern portion of Siberia, where the ground is continually covered with frost. This wonderful object shoots forth from the frozen soil only on the first day of each succeeding year. It shines for but a single day, and then resolves to its original elements. . . . Anthoskoff collected some of these seeds and carried them with him to St. Petersburg. They were placed in a pot of snow, where they remained for some time. On the 1st of the following January the miraculous snowflower burst through its icy covering, and displayed its beauties to the wondering Russian Royalty."

We repeat this only because of the authority that gives it. If true, then here is a New Year's Day gift, the interpreter of which may well be admired by any one of the above-named nine.

Mr. Darwin himself, in his *Journal*, furnishes us with some striking examples of what might have shaken his own creed when he came to it. He had the good fortune, he says, "to see several of the famous Ornithorhynchus paradoxus." It is not probable that any man will make plain to us how, in the quite natural

development of a quite natural advantage, such an extraordinary creature came by and by to be built up. But is not the Benchuca, "the great black bug of the Pampas," still more extraordinary? Mr. Darwin speaks of it thus—

"It is most disgusting to feel soft wingless insects, an inch long, crawling over one's body. Before sucking they are quite thin, but afterwards become round and bloated with blood, and in this state are easily crushed. One which I caught at Iquique was very empty. When placed on a table, and though surrounded by people, if a finger was presented, the bold insect would immediately protrude its sucker, make a charge, and, if allowed, draw blood. It was curious to watch its body during the act of sucking, as in less than ten minutes it changed from being as flat as a wafer to a globular form. This one feast, for which the benchuca was indebted to one of the officers, kept it fat during four whole months; but, after the first fortnight, it was quite ready to have another suck."

One meal could keep this insect fat during four whole months, how account by variation and application of accident for such an extraordinary advantage?

The Pteroptochos albicollis is particularly amusing. "It is called Tapacolo, or 'cover your posteriors,'" says Mr. Darwin; "and well does the shameless little bird deserve its name, for it carries its tail more than erect, that is, inclined backwards towards its head." On first seeing the Turco, another bird of the same genus, "one is tempted to exclaim, 'A vilely stuffed specimen has escaped from some museum, and has come to life again!' It really requires little imagination to believe that it is ashamed of itself, and is aware of its most ridiculous figure." How certain marine animals come to save themselves from detection, some by emitting "a very fine purplish-red fluid which stains the water for the space of a foot around," and others by similarly "discolouring the water with a dark chestnut-brown ink," will give some trouble to the explanation by gradual

growth of an extraordinary advantage somehow accidentally begun, as also how other such animals secure escape for themselves by "varying their tints according to the nature of the ground over which they pass," or as just how the spider first took to the life of a Retiarius! But, perhaps, the Zorillo or skunk beats all other animals in the way of such strange expedients for commodity.

It is thus Mr. Darwin characterises it—

"Conscious of its power, it roams by day about the open plain, and fears neither dog nor man. If a dog is urged to the attack, its courage is instantly checked by a few drops of the fetid oil, which brings on violent sickness and running at the nose. Whatever is once polluted by it is for ever useless. Azara says the smell can be perceived at a league distant; more than once, when entering the harbour of Monte Video, the wind being off shore, we have perceived the odour on board the *Beagle*. Certain it is, that every animal willingly makes room for the Zorillo." (Why, then, are there not more of it?)

Here, to a like moral, is his description of a toad—

"One little toad (Phryniscus nigricans) was most singular from its colour. If we imagine, first, that it had been steeped in the blackest ink, and then, when dry, allowed to crawl over a board, freshly painted with the brightest vermilion, so as to colour the soles of its feet and parts of its stomach, a good idea of its appearance will be gained. Surely it ought to have been called *Diabolicus*, for it is a fit toad to preach in the ear of Eve. Instead of being nocturnal in its habits, as other toads are, and living in damp obscure recesses, it crawls during the heat of the day about the dry sand-hillocks and arid plains, where not a single drop of water can be found."

How the black colour came, and how the vermilion, but especially perhaps how, though a toad, it can live "where not a single drop of water can be found," will surely puzzle any one who trusts wholly to the now familiar machinery of the pictured application of ordinary

variation. Mr. Darwin comments, "It must necessarily depend on the dew for its moisture;" but then we are told that "in arid deserts, dew is not often seen," or even that "barren rocks and sandy deserts do not receive this congenial moisture!"

If we turn here to the writings of the grandfather, especially in the notes to the *Botanic Garden*, we shall find more examples of inexplicable form and structure than we can well allow space for. It is principally in illustration of design that Dr. Erasmus is prompted to call attention to such; and it is perhaps only even-handed justice, so far, on our part, to welcome opportunity of reference to the grandfather when it is on his side that the advantage of the comparison lies. Whatever countenance Dr. Erasmus Darwin may seem to lend to the merely physical element, he certainly conceives that element as always in submission to ideas. "Animation" is a distinct separate principle to him, not possibly to be accounted for by any mechanism or chemistry in the whole encyclopædical muniment.

A remarkable instance of design we have seen him name already (p. 51), as exemplified "in the black diverging area from the eyes of the swan." The beginning at all, or the first small beginnings, and then the gradually, bit by bit, expanding advantage of this area, might prove a difficulty to natural selection but for the liberty of speech. It can always be *said* that, in the infinitude of time, any the smallest advantage could only grow, consequently by gradation grow—to any assignable climax you please. It is a greater relative master than Cicero, who has a right to claim for himself the indefeasible privilege of—"a mere matter of words."

Of plants that exemplify design, Dr. Erasmus has to mention the names of quite a surprising number, accompanied always by the most entertaining information.

He is particularly interesting in the cases he brings forward of the various contrivances, in untoward circumstances, for securing the fecundation of the plant. "In the flower of the Nigella," he says, "the tall females bend down to their dwarf husbands," as in Collinsonia the pistil stoops to each of the two undersized stamens alternately, while that of the Epilobium creeps down to the males, and spends several days among them. In the common Broom the pistil curves itself round like a French horn to the stamens below it. The pistil is longer than the stamens in the American Cowslip also; hence the flower-stalks have their elegant bend that the stigma may hang downwards to receive the pollen of the anthers; the petals being so beautifully turned back, too, to prevent the rain or dewdrops from sliding down to the pollen, at the same time that they are erected again as soon as the seeds are formed, to prevent them from falling out. In the Hemerocallis flava the long pistil is often somewhat like the capital letter N in order to shorten it; and so it is seen to be on its knees to the stamens. The Vallisneria is an aquatic plant, and its flowers are above water so far as the female is concerned, but the males are fixed to the bottom by short stems. When fecundation is to take place, however, the males actually detach themselves, rise to the surface, and float to the females.

On the part of Dr. Erasmus also we have various very peculiar plants instanced, which it would certainly tax ingenuity to tell a story to explain. There are the Noctiflora, for example; one of which, the Cereus, expands a most exquisitely beautiful flower, and emits a most fragrant odour for a few hours in the night, and then closes to open no more. Similarly the flowers of the Hibiscus trionum continue but a single hour. Not to speak of Zostera that must rise from the bottom of

the sea and bring its seeds to the air, or of the Tapa and Ulva that are supported on the surface of the water by so many thereto contrived air-bladders, there is the Hedysarum gyrans, whose leaves are in constant motion, some rising, some falling, and others whirling circularly about; there is the Ocynum salinum, which, though it grows sixty miles from the sea, is yet every morning covered with saline globules, glittering at a distance like dew, and so furnishes to the peasants who collect it, about half an ounce of fine salt, plant by plant, daily; and there is the Cacalia suaveolens, as prolific in honey as the Tobacco plant is prolific in seeds. The honey may be smelt at a great distance from the plant. Dr. Erasmus "once counted on one of these plants, besides bees of various kinds without number, above two hundred painted butterflies." On one Tobacco plant, again, the seeds amounted to 360,000. "Nature," remarks Dr. Erasmus here, and we have seen at her hands generally as much in regard to the so-called struggle for life, "is wonderfully prodigal in her seeds of vegetables and the spawn of fish."

Dr. Erasmus is nowise behindhand either in his record of plants that imitate the structures of even animal life. While the grandson seems to favour the principle of attraction in such cases, repulsion is the emphatic belief of the grandfather. So it is that he sings of "fair Cypripedia," who has taken on the form of a spider—

> "In ambush sly the mimic warrior lies,
> And on quick wings the panting plunderer flies."

A curious example of this kind is the Ophrys, of which there are several species, respectively imitating the singular figures of gnats, flies, bees, and other insects; while there is one, called anthropofera, the man-shaped

Ophrys, which has flowers "representing the figure of a naked man," but whether in that case to attract or repel must surely remain a mystery! May not this naked man, in fact, actually put to flight these gnats, flies, bees, and other insects, with all that depends on them?

There is a remarkable tendency on the part of plants quite generally, according to Erasmus, to organise defence for themselves. The upper side of the leaf, for instance, is the organ of respiration for plants, and, accordingly, necessitates much ingenuity on their part to secure it from injury. It is by a sort of waxy varnish, which is quite impervious to wet, that the pollen is, so to speak, tarpaulined into safety from it; and it is by the same contrivance that leaves like those of the cabbage oppose to the rain and the dew impregnable upper surfaces. There are other plants, it seems, which, against wet weather and at night, fairly close their leaves; while others, again, content themselves by turning down, simply to let the water run off. Dr. Erasmus is at pains categorically to assert that such movements of reason (at least in the ultimate for us, too), "cannot be explained from mere mechanism;" and he directly asks, in lieu of being "a merely mechanical effect," does not this fact indicate "a vegetable storge"?

Similar curiosities of animal life come also to be occasionally mentioned by Dr. Erasmus, as the formidable tusks of the boar, which is not naturally a carnivorous animal, or the enormous honey-routing proboscis, sometimes three inches in length, which the Sphinx convolvula carries rolled up in concentric circles under its chin; or the wingless female Lampyris, which is consequently unable to fly, but which calls her winged husband to her side by illuminating her body, and in this way, as it were, showing him a light.

Had it been all true that Aristotle, Pliny, and many

moderns tell us of the Nautilus of the sea, of the tiny creature in its fairy shell-chariot, that, throwing out its ballast, rises to the surface, and spreads its gauzy canvas to the breeze, but when a storm comes, or danger threatens, hastily assumes its ballast again, and sinks in safety to its refuge at the bottom—had all that been true, there might have been, on the part of Dr. Erasmus, another nut for his grandson to crack. But the Pinna is quite as hard a nut; and it is thus that the grandfather, referring to Linnæus, speaks of it:—

"The Pinna, or Sea-slug, is contained in a two-valve shell, weighing sometimes fifteen pounds, and emits a beard of fine, long, glossy, silk-like fibres, by which it is suspended to the rocks, twenty or thirty feet beneath the surface of the sea. In this situation it is so successfully attacked by the light-footed Polypus" (a Cuttle-fish, says a Cyclopædia, that rushes upon her like a lion), "that the species perhaps could not exist but for the exertions of the Cancer pinnotheres, who lives in the same shell as a guard and companion. The Pinnotheres or Pinnophylax is a small crab, naked like Bernard the Hermit, but is furnished with good eyes, and lives in the same shell with the Pinna; when they want food the Pinna opens its shell, and sends its faithful ally to forage; but if the Cancer sees the Polypus, he returns suddenly to the arms of his blind hostess, who, by closing the shell, avoids the fury of her enemy; otherwise, when it has procured a booty, it brings it to the opening of the shell, where it is admitted, and they divide the prey."

This is a story, evidently, that requires authentication; but it is strange that the latest Encyclopædias scarcely disturb it.

However it be, it is a Darwin that speaks[1]; as thus also of the Sturgeon—

"His mouth is placed under the head, without teeth, like the opening of a purse, which he has the power to push suddenly out or retract. Before his mouth, under the beak or nose, hang four

[1] His reference to Linnæus for the Pinna is, *Syst. Nat.* vol. i. pp. 1159 and 1040.

tendrils some inches long, and which so resemble earth-worms, that small fish or sea insects, mistaking them for real worms, and approaching them for plunder, are sucked into the maw of their enemy — which, having no jaws, evidently lives by suction, as he lies hiding his large body amongst the weeds, and only exposing his cirri or tendrils."

Dr. Erasmus Darwin's contemporaries talk with admiration of such things in "his beautiful poem, the Loves of the Plants;" and no doubt he says much at times that is quite worthy of the highest admiration. It is only a problem, as he puts it, how "the tasteless moisture of the earth is converted by the hop-plant into a bitter juice." Can natural selection explain how—and not simply fable an accident that—a first strange tinge, falling into a proper recipient, proved an advantage such that, in the struggle for existence, it gradually developed what of plant there was into the hop-plant that is? And if natural selection can untie the knot that may be supposed there, perhaps it can undo also the somewhat harder one that lies in the midst of these questions of Dr. Erasmus: "What induces the bee, who lives on honey, to lay up vegetable powder for its young? What induces the butterfly to lay its eggs on leaves, when itself feeds on honey? What induces other flies to seek a food for their progeny different from what they consume themselves?" Mr. Darwin cuts all such knots with a sword of fictitious gradation, which, if even sharp enough for the middle of a string of them, is all too blunt to make any impression on a necessary first. For his part, the grandfather would unbind all such knots in reason. "If these" (actions), he says, referring to the insects, "are not deductions from their own previous experience or observation, all the actions of mankind must be resolved into instinct." That is as much as to say, if the manifestation of ideas in insects is to be referred to instinct, and not to reason; so neither must

it be referred to reason—no, only to instinct—in men. But that would be to err by excess, for instinct *is*.

If nature is not incoherent like a wretched tragedy, she is still only dæmonic, as we can read in Aristotle. That is, she acts without reflection as though with reflection, without motive as though with motive, without sight as though with sight. Reason is in nature immanent; it is not explicit; it is *an sich*, not *für sich*.

In what way soever, nevertheless, still it is there. Even Hume (*D. of N. R.*, Pt. vi.) exclaims, "How could things have been as they are, were there not an original, inherent principle of order somewhere, in thought or in matter?" Only a very dark principle, only a very dark thought, it could have been in these insects. The bee and the butterfly are wholly given up to honey; only in honey it is that they have their being, so to speak: how could they possibly think that their own all in all, honey, would never do for their children, and that for them they must provide something so unlike honey as vegetable powder and vegetable leaves?

It would be pleasant if only for the sake of Charles, we could get in the thin edge of an inherited habit here. But how were that possible? Even if latterly (by an "observation and experience" which are inconceivable) there were an inheritance of habit, how, in the first instance, just abstractly at once *appearing*, by extraordinary accident, or in what manner soever, did this thought in the original butterfly act: what I eat is honey, but what, when born, that which is within me can only eat is—a green leaf?!

We have certainly seen now ample testimony to such singularity of structure as may at least tend to shake belief in the power of natural selection to explain it. It may be said, indeed, that if any philosophy is to be

relieved of particularity, and in mere generality to be held sufficient, why not, with equal justice, natural selection also? But then, is the "equal justice" so very certain? A philosophy of nature — say at once Aristotle's—may have great general principles, which really suffice for an ideal articulation of the various limbs, lobes, and lobules of nature into a graduated unity of reason; but can it be said of ordinary variation as we daily see it, followed by an application of it that is only in supposition—can it be said that these are general principles? Or even can it be said that, though particular themselves, still, they do not challenge the particular? Such philosophy as is in question, safe in the *Idea* for all that holds of the general, can still appeal to this very Idea for this particular itself—in its enormous latitude of external contingency; and it is to such material and element that philosophy would refer such monstrous caricatures as the Penguin flower that is the astonishment of all Botanical hothouses at present. But is it free to natural selection in such cases to refer even so? Not but that it may have been the despair of the apparent mere haphazard phantasy in this contingency that expressed from Mr. Darwin himself the cry, All is but variable accident, followed by an application of it that is equally variable, equally haphazard; and there are no principles but these: chance variation and the chance application of it!

But are they, again, principles—that variation, and that application? Is either, in effect, more than a mere naming, more than a phrase, more than a word? No doubt the successors of any one whale or of any one midge, of any one man or of any one gooseberry bush, all vary in points from their predecessors. But do not all these points revert? or do they not at least always so bear themselves that the universal remains? Do

they ever in any experience—in any experience that is recorded even—accumulate into something that, compared with their primitive, is essentially different, essentially new? The tame duck varies from the wild, the hackney from the charger, the new foraminifer from the old,—but, as we have seen more than once already, ducks are still ducks, horses are still horses, foraminifera are still foraminifera; and, in the same way, those wonderful parrots that in four hundred years have changed as much as they are said to have changed (I have only heard—I have not myself read) are still parrots. Why, are not the blackbirds in Arcadian Cyllene (Aristotle)—ay and elsewhere (Cuvier)—white? Or, after two thousand five hundred years, do not we see cocks, pheasants, and peacocks very much the same as those Solon and Crœsus saw?

CHAPTER XVI.

RESULT.

LOOKING back on what lies behind us, we may now draw all, summarisingly, to a close.

It may, perhaps, occur to reflect here, that, let us but take up the book itself, the *Origin* of Mr. Darwin, and read, it is almost only with a shock that we *can* look back. With the *Origin* in our hand, and having just read, when we do look back, "That cannot be right," we say to ourselves; "why, just read how it all goes on! and have we the presumption to oppugn a credence that is still, at least so far, in very general repute?"

But, at check thus, and continuing to think, we may by and by remind ourselves of much that, more and more, brings with it the heartening of reassurance.

There is the plan (p. 152) with which we set out, for example, and the salient consideration in regard to it that the complaint of Mr. Darwin (p. 313), with reference to "Classification, Geological Succession, Homologies, Embryology, and Rudimentary Organs" etc., if it lies against his Reviewers, lies quite as strongly against ourselves; but so, nevertheless, that the plan itself, perhaps, remains unaffected. It is not evolution as evolution, namely, that we have it in hand directly to canvass, but solely the special and peculiar device by which Mr. Darwin, if there is evolution, would accom-

plish evolution—realise evolution. Of evolution itself, so far as depends on these "Homologies," etc., we do not for a moment deny that the compilation, which, with a running text of arguing and arguing, the *Origin* alone is, has significantly added to the evidence. But these homologies and the rest we hold ourselves dispensed from the consideration of, simply in view of the fact that they were a material common to all the evolutionary theories, and never on the whole denied even by the creationary ones. This, too, by the example of Mr. Darwin himself, who, in seeking preliminarily to persuade the three or four accepted and established authorities on whom his success was to depend, only named to them, as it were in passing, said homologies, embryologies, etc., and confined himself further to the single device, natural selection, by which it was his belief that the process, as though by an agency at work, could satisfactorily be brought to its accomplishment. We were the more emboldened, too, to the exclusion in question by the conclusions of Mr. Huxley that Mr. Darwin, in regard to the five requisites, "Classification," etc., could claim for himself the authority of a worker at first hand in no more than one of them, Geology. These conclusions of Mr. Huxley's will be found fully discussed at pp. 179–181, where what relates to "physical geography" and "palæontology" need not prove a difficulty.

So far of the material excluded; but, as in looking back it may also occur to us now to reflect, the question of authority being in view, Mr. Huxley's position is no very fixed or determinate one even for the single consideration that has been left us—the mere process, namely. It is (ii. 197) "a matter of indifference" to him whether the Darwinian doctrine shall "prove to be final or not;" to Mr. Darwin's discomfort (as more than once indirectly in evidence), he stickles for the infertility of hybrids all

through; he admits generalisations still to fail, and laments the defect as yet of a crucial experiment in breeding (ii. 199, 198).

All the other experts (p. 177), as is also to be recollected here, whose authority would be critical on the question, have, with the single exception of Sir Joseph Hooker, been proved to be even more equivocal in their Darwinianism than Mr. Huxley. It is very emphatically so with Sir Charles Lyell as the expert in chief. With Asa Gray it can hardly be said to be otherwise. Carpenter need not be named; and Wallace urges exceptions, and so expresses himself, that he certainly cannot be called a Darwinian within the strictness of the letter. It is remarkable, too, that he speaks of "varieties" (see p. 182), and not of *variations*. Nay, again to refer to him so, it is not certain that in this respect Mr. Huxley himself is not similarly minded. Perhaps, after all, it was not "carelessness" (p. 186) that led Mr. Huxley to speak of Mr. Darwin's variations as though they were at once "variations from their specific type"—perhaps neither Mr. Huxley nor Mr. Wallace fairly realised that Mr. Darwin's initial variation is only that of the child from the parent (see p. 270), or that (p. 271) he perpetually emphasised the smallness, slightness, triflingness, casualty of the individual difference or variation that was to him a determinant one—the bird with the beak, the seals, the bats, the insects, the elephant with its tusks, the bear, the whale, etc.

Nor can we feel quite sure that we ought to exonerate Mr. Darwin himself from all blame here. It is only through long, patient looking that the particular moments in the theory have reached the clearness which we should be glad to think they will be found to possess in these pages. Mr. Darwin but too often widens and weakens his expression into a vagueness and

indefiniteness of superfluous phrase precisely then when it is that vagueness and indefiniteness should be expressly eschewed. Divergence, natural selection, appear for the most part, perhaps, only in a mist of general terms, with never a moment, and never a connection of moment with moment, prescinded. An expression or two, extemporaneously occurring here and there in letters to Lyell, will pretty certainly do more to crystallise the particular theory than all the four hundred and odd closely-printed pages of the sixth edition of the *Origin*.

In regard to Divergence, for example, take this sentence, which is meant to go precisely to the centre of what is concerned and make all clear even to his children (i. 84): "The solution, as I believe, is that the modified offspring of all dominant and increasing forms tend to become adapted to many and highly diversified places in the economy of nature" (or see in the *Origin* the whole theme formally discussed at pp. 86 *sqq.*). When we understand that this means only that a stock of horses may "split up into race-horses, dray-horses," etc., we look back with astonishment at that so gratuitous and misleading phraseological bigness. I say misleading; for it is in every way misleading. It is misleading for the reader, who remains not without perplexity, it may be, as to how or what they are these dominant and increasing forms in the economy of nature. It is misleading for Mr. Darwin himself, who, quitting the definitely seen for the indefinite and unseen, is tempted to call upon the ingenuity of his imagination for the transference of a relation domestically with horses at home to a lair in the jungle wildly with the *ferœ* abroad. "Take the case of a carnivorous quadruped," he says, "it can succeed in increasing only by its varying descendants seizing on places at present occupied by other animals: some of them, for instance, being enabled to feed on new kinds of

prey, either dead or alive; some inhabiting new stations, climbing trees, frequenting waters, and some, perhaps, becoming less carnivorous!" Now all that is simply, as Carlyle might have said, wind; there is not an atom of ascertained fact in it; it is merely a promissory note on a security in the clouds; it is only Mr. Darwin in a haze of idle speculation, of which such a man as he was ought to have been ashamed—especially considering the gravity of all that was involved.

But, as regards Natural Selection in the same reference (expression namely), it will be sufficient to direct attention back to the preface. There Mr. Darwin is seen to have been at times in consternation, as it were, before the impossibility of his getting people to know what he meant—specially what he meant by *natural selection*. He was apt to "demur" when such experts as Lyell and Hooker would put his theories into their own words. "Even able men," he exclaims, "cannot understand at what I am driving." Will it be thought impertinence on our part if we venture to suggest here, besides the language, the thing itself that was wrapped up in it? People could not see this thing itself, not for its complexity but for its simplicity. For the theory that was to be understood to explain such marvels, they looked up to the skies or away to the infinite; it never for a moment dawned upon them that it could be that so common, everyday thing that lay at their feet. Oh no! No, never! That could not be all that was meant to be understood. Do you mean to, insinuate that, because of such ordinary, trifling variations in organisms, plant or animal, as we casually, from day to day, see—the $\frac{1}{100}$th of an inch of additional length to the beak of a bird, say—only supposititiously assumed to accumulate, and that only in a supposititiously assumed infinitude of time,—do you mean to insinuate that it is on that, this whole

bouleversement, this whole *bouleversement* of the universe sits? Because Darwin has come to see no more than—that the colt is not quite like the sire, the filly not quite like the dam—is it for a moment to be supposed (Christianity itself is a small matter!) that this absolute *bouleversement* once for all is? That Darwin's observations on the effect of crossing pigeons has led to "a revolution in the whole philosophy of Europe"—that is no more than an exiguous makeweight into the bargain!

But, was there ever anything in this world so puerile?

It is possible, however, that, if neither Mr. Huxley nor Mr. Wallace fairly realised the exact reach of Mr. Darwin's variation, but began, the one with a formed "variety," and the other with already-made "variations from the *specific type*"—it is still possible that Mr. Darwin, even in his slight and casual everyday *difference*, has the advantage in a certain way over both. *So*, there is at least consequence in Mr. Darwin's thinking. For it is evident that, assume the formed variety, or assume the specific variation, the question cannot be avoided, How did they come?—what is the first of either? Now, to that, in accordance with Mr. Darwin's principle of gradation, the answer can only be, Why, the very first imperceptible accident, to be sure! As it is with the tide upon the beach, so is it with difference in the organism: both escape notice till by accumulation they become irresistible.

There is, indeed, consequence in Mr. Darwin's thinking so far; but was there consequence in that whole vast corollary—that flight into the illimitable—from the simple "splitting up" of a stock of horses? Or may we not regard the action there as a break (for us, namely) into the ground, through which to prove the mineral over the whole field—a test in application to the book itself? "He shows," says Mr. Francis Darwin (ii. 15), "how an analogous

divergence takes place under domestication where an originally uniform stock of horses has been split up into race-horses, dray-horses, etc., and then goes on to explain how the same principle applies to natural species."

This is how the same principle applies to natural species:—

"But how, it may be asked, can any analogous principle apply in nature? I believe it can and does apply most efficiently (though it was a long time before I saw how) from the simple circumstance that the more diversified the descendants from any one species become in structure, constitution and habits, by so much will they be better enabled to seize on many and widely diversified places in the polity of nature, and so be enabled to increase in numbers. We can clearly discern this in the case of animals with simple habits. Take the case of a carnivorous quadruped, of which the number that can be supported in any country has long ago arrived at its full average. If its natural power of increase be allowed to act, it can succeed in increasing (the country not undergoing any change in conditions) only by its varying descendants seizing on places at present occupied by other animals: some of them, for instance, being enabled to feed on new kinds of prey, either dead or alive; some inhabiting new stations, climbing trees, frequenting water, and some, perhaps, becoming less carnivorous. The more diversified in habits and structure the descendants of our carnivorous animals become, the more places they will be able to occupy. What applies to one animal will apply throughout all time to all animals,—that is, if they vary,—for otherwise natural selection can effect nothing. So it will be with plants. It has been experimentally proved, that if a plot be sown"—in short, the illustration which we have seen before, pp. 228–230, and p. 269.

If asked how he would transfer the horses from the stable to the jungle, he answers, "I believe!"—I *believe* it can be done, and efficiently too, "*though it was a long time before I saw how!*" That means what we have already seen (p. 228) when engaged in construing what was meant by divergence. It is the "joy," "whilst in his carriage," "long after he had come to Down;" for it was then, whilst in his carriage, that he suddenly saw *how*. And that

"how"—we have the declaration of Mr. Francis Darwin to that effect—was how "an analogous divergence takes place under domestication where an originally uniform stock of horses," etc. In a word, what Mr. Darwin, at least in fancy, saw in his carriage was a stock of horses splitting up, and, in a moment, in the twinkling of an eye, the "joy" transported him to the "carnivorous quadruped" in the jungle. Unlike the horse with his park and his paddock, his stall and his stable, his combs and his currycombs, his beans and his oats, his balls and his mashes, the "carnivorous quadruped" roams at its own will, masterless, without a check. Nevertheless, much to his delight, Mr. Darwin found that this carnivorous quadruped would do quite easily whatever he (Mr. Darwin) had a mind it should do. How frankly supposititious it all is! Mr. Darwin puts the bridle on the neck of his imagination, and actually tells, nothing doubting, of every strange quarter it brings him into. This, probably, is one of the very passages Sedgwick laughed at "till his sides were sore." But what ordinary reader would ever expect that the vast conclusions, in revolution of Europe, Christendom, the Universe, of the greatest Naturalist that was then alive or that had ever lived, were conditioned by such common considerations as those of Mr. Darwin "whilst in his carriage?" "A country that has long ago arrived at its full average" of carnivorous inhabitants—a country that is not "undergoing any change in conditions"—"a natural power of increase being allowed to act," whatever that may mean—descendants that "vary," and that "seize" places actually "at present occupied by other animals"—"some of them feeding on new kinds of prey," "*either dead or alive*"—"some inhabiting new stations, climbing trees, frequenting water, and some, perhaps, becoming less carnivorous"—"what applies to one animal applying throughout *all*

time to *all animals*—that is, if they vary—for otherwise natural selection can do nothing!" It is really only so that an idiosyncratic imagination—the imagination as of an innocent child—wanders, in like passage after like passage, throughout the whole book!

If all these stories had been told to him—all these stories of supposed carnivorous quadrupeds, supposed seals, bats, insects, supposed beaks of birds and tusks of elephants, supposed bears and whales—if all these stories had been told to him, cannot we fancy that such a profane genius as the late Dr. Maginn would have been apt to mutter as he turned away from them—"Which fully accounts for the milk in the cocker nuts"? Mr. Francis Darwin himself told us (see back, pp. 262, 263) how a good many *judges* (not profane) took them—Sedgwick laughing, as we saw, at "assumptions which can neither be proved nor disproved,"—the grim Carlyle snorting out, as it were, "Never could read a page of it, or waste the least thought upon it: wonderful to me as indicating the capricious stupidity of mankind,"—one Académicien able to see before him only "a mass of assertions and absolutely gratuitous hypotheses, often evidently fallacious,"—another similarly exclaiming, "What obscure ideas, false, puerile, and out of date!"—Agassiz looking upon all as "a scientific mistake," "untrue in its facts"—a mistake to which, for Sir Wyville Thomson, "the least support was refused," and which, to Sir John Herschel, was only "higgledy-piggledy!"[1]

[1] It is surprising to me how many excellent intellects are still fascinated by these stories. It is as ripe a scholar as I know that writes thus: "Cats and red clover might seem to have no more logical connection than Tenterden steeple and Goodwin Sands; but Mr. Darwin has shown how the flourishing of red clover depends on the flourishing of cats, who eat the field-mice, who eat the humble-bees, who fertilise the red clover." Now here is a series quite as striking as any algebraic one, and what if, in ultimate instance, it be

If all these are to be called, less or more, judges, some of them are already known to us as express experts, true brothers of the craft. Of such expefts and brothers, indeed, it is probably Sir Joseph Hooker alone in whom, as he was (to us) at last, there is scarcely a sign of short-

not a bit more valid than the nursery rhyme of the dog that worried the cat, that killed the rat, that ate the malt, that lay in the house that Jack built?

In the first place, unless the story be repeated elsewhere than where I have read it (namely, in the *Origin*), it is Col. Newman, and not Mr. Darwin, "has shown"—whatever it may be that has been shown: Mr. Darwin only relatively reports. Whatever has been a problem to Mr. Darwin and specially interests him, usually, or at least frequently, reappears in his correspondence. I can find no trace of the red-clover story in the three volumes of the *Life and Letters*. Even when it occurs to Mr. Darwin to notice the like peculiarity of relation as between the scarlet-runner and the same said humble-bee, at the moment, too, that the whole general subject of fertilising insects is expressly before him (iii. 259 *seq.*), I cannot find him to mention red clover at all. Of course, it may be a matter rather of failed memory than of modified judgment that is concerned in the omission.

However that may be, it is by no means certain that the "logical connection" in reference is either exclusive or strict; at the same time that we are probably in presence here of one of those occasions on which, as his own words are, he (Mr. Darwin) "extensively used facts observed by others." The sequence red clover, humble-bees, field-mice, and cats really appears at p. 57 of the *Origin*, but on the authority named, of Col. Newman. Field-mice do destroy the combs and nests of humble-bees; but there are other enemies most destructive to these latter, as ants, wood-lice, earwigs, spiders, caterpillars, birds, particularly the house-lark and the swallow, and, most formidable of all, the wasp and the hornet. Even were there not a single field-mouse in existence, then, still, to the loss of the clover, there might be variously a destruction of humble-bees.

Again, from p. 75 of the *Origin*, it is quite evident that even with the total destruction of the humble-bees themselves, it is by no means necessary that the red clover should die out along with them. The Ligurian bee, almost already a hive-bee, and freely crossing with it, has about as ready access to the red clover as the humble-bee itself

coming. Out of doors, to say so, there are, of course, a vast number of a sort of business Darwinians, who have been enrolled by conscription, as it were; but, after all, it is only the judges chosen by Mr. Darwin himself who best deserve our appeal. And these, Hooker apart, are, as we may say once again, Carpenter, Gray, Wallace, Lyell, and Huxley. Wallace, generally, on the whole doctrine, discovers a state of mind so frequently, and, indeed, so critically, anti-Darwinian that, in strictness, as has been said, he has no business to be called a Darwinian at all. Lyell, from the moment he came properly to know the doctrine, was really, and in point of fact, that doctrine's absolute opponent. Then, as for Huxley, while his Darwinianism appeared otherwise, as we saw, on the whole,

has. Nay, as it appears, the very hive-bee has also quite the freedom of this same clover—at least in the second crop. Mr. Darwin is only reporting at second-hand here also ("I do not know whether this statement is accurate, nor whether another published statement can be trusted"), and may have seen reason to change his mind. At all events, he is elsewhere, as I say, silent on the point.

It would thus appear that the connections of red clover, humble-bee, and mouse, either are not, or need not be, so very logical; and as for cats, however much they may forage for other ends, in garden-grounds or on the roofs of houses, it would be surely only the few who are deserted or starving that would have the heart to encounter the difficulties, discomforts, and abnegations of an open field more or less distant from their usual haunts.

Here, with insects before us, may I ask, if ever any one has thought of the common flea as, very fairly, a Darwinian difficulty? It is detected in the blanket by the metalline lustre of its back. Now, considering that the man and his dog, perhaps his cat also, have been Darwinianly existent for some 250,000 years, would it not exemplify a much better logic than the cat, the mouse, the bee, and the clover, if every single flea that could possibly be found in these days were dull in the back or even white? After such ages and ages of capture, that a flea's back still shines! Pooh! says Mr. Darwin, that is easy: "The required variation has not yet *chanced* to occur in the right direction" (ii. 337).

loose, his ultimate position was taken on one side of a "dilemma," on the other side of which there was (for him) —bigotry. Mr. Huxley, at least in those works of his which are known to me, seems to write always as though these were the days when Cardan submitted to torture, Campanella suffered twenty-seven years of imprisonment, and Bruno and Vanini perished at the stake. The fanaticism of faith still lives for him.

"Crushed and maimed in every battle, it yet seems never to be slain; and after a hundred defeats, it is at this day as rampant, though, happily, not so mischievous, as in the time of Galileo. But to those whose life is spent, to use Newton's noble words, in picking up here a pebble and there a pebble on the shores of the great ocean of truth—who watch, day by day, the slow but sure advance of that mighty tide, bearing on its bosom the thousand treasures wherewith man ennobles and beautifies his life—it would be laughable, if it were not so sad, to see the little Canutes of the hour enthroned in solemn state, bidding that great wave to stay, and threatening to check its beneficent progress. The wave rises and they fly; but, unlike the brave old Dane, they learn no lesson of humility: the throne is pitched at what seems a safe distance, and the folly is repeated."

That is rhetoric that still tells! But are not the nuts hollow? The question is, Is natural selection a pebble Newton would have picked up—is it a pebble that ought to be picked up? The Darwinian wave, "in its beneficent progress"—is it indeed one a Canute could not, or ought not, to make stop? Who would force a Galileo to his knees now? It is curious how differently different minds look at one and the same thing. Mr. Huxley seems to see Inquisitors in whom I see only adherents of his own. Mr. Huxley may depend upon it, the very men he has the grudge against only learn from him. His books may seem against them; but it is his books they read, and, as Erasmus the younger said, "Upon my life—even buy!" Anything that may seem *for* them, let it be as new as it may, can seem to them only old, old and out

of date. It may be well-meaning—they may cheerfully allow as much as that; but they pass it by as something that, being *for* them, is too plainly, in their regard, without instruction. For that, instruction, it is really to Mr. Huxley they look—he it is that knows what is best for them, the Mills, the Darwins, the Grotes, the Buckles, *al.*

These men are themselves really very much minded as Mr. Huxley is. In regard to all that he holds of superstition, etc.—in regard to all that he holds of that whole region—he need not scold them; they are not different from himself. They are, in fact, just as he himself is, still in their *Aufklärung No.* 1. Something else than this, a correction of it, has been in existence for many, many years now; but they know nothing of it. Still stumbling at the letter, and with all these Frenchmen in memory, they know nothing of an *Aufklärung No.* 2 that can afford, in the light of the spirit, to overlook the opacity of the letter. In all English-speaking countries, it is still the *Aufklärung No.* 1 that is the leading divinity, and I know not but that it is Mr. Huxley who is pretty generally its prophet. In England, in America, there is no name more current than his—not Mill's, not Buckle's, not Darwin's own.[1]

As society is, then, this of Darwinianism is very much a question in the mere *Vorstellung*, in the mere feeling and prejudice of the day. There are a great many more Darwinians on grounds of hostility to the supposed common belief than Mr. Huxley. And, most assuredly, it is on no such grounds that we, for our part, would see the question discussed. Things being as they are, that can

[1] The above will be understood in its spirit. Who of the many faithful that still are, would persecute any Galileo now? Any such persecution could only come in these days from, so to speak, the *un*-faithful faithful.

be rationally accomplished at present, not in any religious reference *pro*, and still less, as I honestly believe, in any religious reference *contra*, but only in an absolutely abstract inquest, the determination of which, the bringing of which to an ultimate result and to truth, shall depend on the application of no principles but those of thought as thought, with an ear, if open to science on the one side, yet not practically deaf to philosophy on the other.[1]

Now, religion apart, when we turn to Mr. Huxley in that aspect which has Darwinianism in regard only as it is in itself, only as it shows itself to thought, then, plainly, it is no prone disciple that we have before us. No; Mr. Huxley stands sturdily on his own legs with respect to infertility as a determining character of species, maugre all the Gärtners and Kölreuters Mr. Darwin throws at him. The theory of Mr. Darwin shall be only a "working hypothesis" to him; and he will be "indifferent" whether it prove "final" or not. In fact, there are, as he is free to acknowledge, multitudes of phenomena in organic nature which no "generalisations" have yet reached. Of that multitude we may conjecture sex to be one. Mr. Darwin, for his part, can welcome the original hermaphrodite that gets cut in twain into a Deucalion on the one side and a Pyrrha on the other. But perhaps Mr. Huxley does not see quite as easily as Mr. Darwin, that any such section in any way sunders the knot to satisfaction, either forwards or backwards. The simple fact of fertilisation, fecundation, may prove puzzling, too, and the old problem, which is first, the hen or the

[1] Kind, in his *Origen against Celsus*, writing fairly on the Pagan, but equally fairly on the Christian, has misled British essayists, as *aufgeklärt*, to take the side of the Pagan only. It concerns philosophy that he concludes thus: "The last word in explanation of the productions of nature, it is for philosophy to speak."

egg?[1] I daresay he may not be able, either, to find in Darwinianism an explanation of that extraordinary march, once a year, of the millions and millions of land-crabs from the mountains to the far-distant sea; or of the similar march of the lemmings; or even of that wonderfully multitudinous gathering, before flight, of our own swallows, if he had ever witnessed it, or of the flight itself; or, again, of that salmon that leaps nineteen feet up a waterfall on the Liffey in order to deposit its eggs above it, and then returns down it again to the sea. I fancy he may be struck, too, by what one of the British Association presidents (Sir A. Geikie) tells about there being no resemblance between the lizards of the first of the tertiary formations and the elephants, mastodons, etc., of the last of them.[2] It is possible, also, that Mr. Huxley might not, so unmisgivingly as Darwin, throw into a single unknown *x* "all the great kingdoms (as Vertebrata, Articulata, etc.)." There might appear to him something even comical in the identifying into a common slump of all these differences—fishes, birds, beasts, sponges, insects, worms, what not. To arrive so perfunctorily at

[1] It is curious to think, indeed, that if the hen, over the egg, had cackled always as clamorously as she cackles now, there would, Darwinianly, by this time, in view of enemies, have been neither the one nor the other—neither a hen nor an egg. I have tried to track out the first literary notice of this problem, but not very successfully. Censorinus (*De Die Natali*, iv. 3), in the middle of the third century after Christ, certainly goes back to Aristotle for the question, *avesne ante an ova generata sint;* but it does not appear in A.'s extant works. An earlier reference to the problem itself occurs in Plutarch's *Banquet* (ii. c. 3), and a later in Macrobius (*Saturn*, vii. 16).

[2] I fancy myself that that Atlantosaurus of which Geikie speaks—the "most colossal animal that ever walked on the earth," not much less than a hundred feet in length and thirty feet or more in height"—ought to puzzle him (Huxley) *simply as there*, quite as much as the *Rhinoceros tichorhinus* could have puzzled Dr. Whewell, "the encyclopædic Master of Trinity," as a first.

such an enormous consummation as that might seem to him a putting on of the seven-league boots with a vengeance! Even when he thought of the "warm little pond," with ammonia, etc., he need not have thought of it as only one. If there was one, there might plainly have been several; and different water, different air, different light, different bottom, different banks, and different objects on them, might have superinduced upon their respective protoplasms, or insinuated into them, quite a variety of powers, just as we can understand even now that every germ, every indistinguishable particle of protoplasm, has potentialities always latently its own. Mr. Huxley may have had an idea of that. Nay, the contrary supposition, animals only the one, after the other, out of each other, may have appeared to him coarse. On the whole, then, from all that we see, and from what he himself writes, it does not appear unfair to regard the religious idea as the main agent in the inducing of Mr. Huxley to profess a general acceptance of Darwinianism. Perhaps we may still wonder that this prejudice of enlightenment should have been allowed by Mr. Huxley to blind so clear an understanding as his to the true import of these moments that constitute the theory. It will not be denied that these moments are variation and the selective application of it. Divergence may be added to these, though rather, in reality, as we have seen, only an illustration. We have already discussed, indeed, all three terms and ideas so fully that any mistake in their regard is not now to be supposed. We saw (p. 273) that when Mr. Darwin expressed himself as unable to doubt that during millions of generations variations would arise and accumulate into new species, he might just as well have said, that he was unable to doubt that new species were a spontaneous product of time. "Why cannot he have said at once, I cannot doubt but that in millions of genera-

tions new species will form? What is the use of gratuitously putting off the climax by the shoving in of an imagined variation, that adds not one single iota of what explanation is desired?" This, I say, is so obvious, that the power of a religious prejudice over the clearest and quickest of minds can appeal only to our wonder. The moment of selection is not different: it is wholly dependent on, and conditioned by, the variation, and, in simple supposititiousness, it is only a degree further. The dilemma is quite the same whether we should suppose the initial variation to be small or great, and it must be either the one or the other. If great, then species are simply spontaneous. If small, then there is the difficulty of these everyday accidental smalls (that always revert!) ever accumulating into a species—the very accumulation being only another way of saying that species just accidentally form themselves. If divergence be preferably regarded as a separate idea, then that idea also must submit itself to the same two alternatives: it must be at once either great or small, and with exactly the same consequences. Further (p. 188), it is for Mr. Huxley's special consideration that Mr. Darwin's "primordial form," his "single prototype," is tantamount to Mr. Huxley's own *Rhinoceros tichorhinus*, and must stultify for him the entire affair in advance. Absolutely, when, in the dilemma of "the Darwinian hypothesis" *or* "the creation hypothesis," we see Mr. Huxley rush to the former, we may know that it is only the latter has driven him.

Altogether, in view of the whole matter, would it not be well to bethink ourselves at last of the words of Professor Flower, in his presidential address to the British Association, at Newcastle, in 1889: "On these mysteries of nature a frank confession of ignorance is the most straightforward, indeed the only honest position we can assume when questioned on these subjects"? If "an

'*Oriental Naturalist*,' with lots of imagination and not too much regard for facts, is just the man to discuss species," according to Mr. Darwin (ii. 41), that, evidently, is not a sentiment that will, even half jocosely, recommend itself to Professor Flower.

All is due to natural selection; and natural selection, whether it is in the moment of variation, or whether it is in the moment of application, is absolutely conditioned by accident. When we consider this, can it be allowed us to wonder that, somewhat profanely, as regards organisation, the Darwinian *rationale* of it in nature has been termed "a fluke"?

This is strange, too—in the whole *Origin of Species* there is not a single word of origin! The very species which is to originate never originates, but, on the contrary, is always already to the fore (p. 249). Nay, as no breeder ever yet made a new species or even a permanent race; so the Darwins themselves, both Charles and his son Mr. Francis (pp. 268, 269), confess: "We cannot prove that a single species has changed."

It is curious to contrast these facts with what seems the current belief of literature. In the books of the day —novels, say—we are accustomed to come again and again on "Darwin." And "Darwin" is something mystic—a prodigious knowledge and power, that, in absolute intelligence of all things, has deposed the Deity, and that is kept awfully under lock and key, only softly, fearfully, to be flitted to in secret by hero and heroine, who themselves, of course, are far too superior not to be —*aufgeklärt!*

The knowledge as knowledge, then—was it so prodigious?

It was only the word *origin* did all this; and the word *origin*, strictly, was a misnomer; misleading, not novelists alone, but the general public as such, into anti-

cipations of a beginning and a first that was to be, as it were, a new creation of all things: whereas Mr. Darwin himself exclaims (iii. 18), "It is mere rubbish thinking at present of the origin of life!" Had Mr. Darwin but used, instead of the word origin, his own other word for the idea in his mind, "modification," namely—had his title-page ran, "The Modification of Species by means of Natural Selection," I question whether Mr. Murray, with all his experience, would, for each of the thousand copies he did sell, actually have sold ten.

For myself, in conclusion, I must say this: I admire the naturalist and I honour the man; but I hope to be forgiven if, "for the life of me," I cannot but smile when assured by Mr. Darwin that there is not necessarily such a thing as design in this universe,—

"*Now that the law of natural selection has been discovered.*"

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